A Hitchcock Publication

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H TIER

AUGUST 1950

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DOOR BEAD
SCREEN MOULDINGS
CASE BACKS
WEATHER STRIP, ETC.

with
SPOTNAILS
Sizes: ⅜" to ⅞"

SASH
CORNER FRAMES, ETC.

with
SPOTPINS
Sizes: ⅜" to 1⅛"

SCREEN MESH
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SPOT-TACKS
Sizes: 3/16" to 7/16"

Automatic Magazine Feed Machines

The Spotnails Automatic *Magazine Feed* Machines do a better job—faster and cheaper. Call your local Spotnails representative or write for complete information regarding your specific requirements.

SPOTNAILS, INC.
Evanston 1, Illinois

"OLIVER" 18-INCH SINGLE SURFACE PLANER

A smooth-running, small Surfacer that does excellent work

This "Oliver" Planer is a favorite among woodworkers, handling stock up to 18 inches wide and 6 inches thick. The base, sides, and the housings for the cylinder and upper roll bearings are cast in one piece, assuring perfect and permanent bearing alignment. Unusually deep square gibbed ways keep the table parallel. Ball bearings for cutterhead, roller bearings for rolls. All operating adjustments are made from the top. Feed and control lever easily shifted.

The "Oliver" line includes Hand Planers and Jointers, Single Surfacers, Power Feed Facers, and the famous Straitoplane — a machine that planes both sides of the stock smooth and parallel in one operation. Write for full details.

OLIVER

Write today for Bulletin No. 399

OLIVER MACHINERY COMPANY

Established 1890 **GRAND RAPIDS 2, MICHIGAN**

TEAM UP These Tools to SPEED UP Assembly Jobs!

DRIVE SCREWS FASTER, MORE ACCURATELY with Black & Decker Screw Drivers! Light, compact, easy to operate, these B&D Tools handle everything from your most delicate screw driving operation to driving and tightening nuts and bolts up to 1" diameter. Your choice of 25 different models—including Positive Clutch Models for versatility; Adjustable Clutch Models for driving to a uniform, predetermined tension; 90°-Angle Models for working in close quarters and around corners. Powerful motors; extra-tough gears, shaft and chuck spindle; husky housings—all built for years of service!

HEAT GLUE IN A JIFFY—KEEP IT AT 150° with a handy Black & Decker Glue Pot! Lets you bring glue quickly to the correct working temperature—*and hold it there* within 5 degrees by thermostatic control. The two-quart capacity and fast heating action of the B & D Glue Pot help you save time, do a more uniform assembly job because it keeps enough glue constantly at the temperature you want. The nichrome heating element is sealed and protected against dust and moisture, assures you of trouble-free operation on all your woodworking jobs.

SEE YOUR NEARBY B & D DISTRIBUTOR for free demonstrations of these time-saving, cost-cutting Tools. Write for detailed catalog to: THE BLACK & DECKER MFG. CO., 667 Pennsylvania Ave., Towson 4, Maryland.

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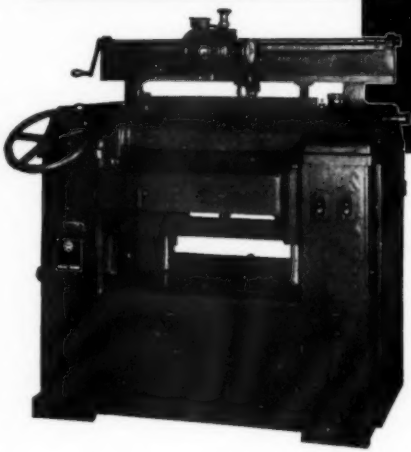
Black & Decker

PORTABLE ELECTRIC TOOLS

DIVIDEND DESIGN gives the PORTER 405 SURFACER 5 Big Advantages



- HIGHER SPEED OPERATION
- PREMIUM CAPACITY
- FASTER ADJUSTMENT
- EASIER OPERATION
- LONGER LIFE

Because of Dividend Design, a Porter 405 Surfacer will handle more lumber at lower cost than ordinary machines. Its extra margin of speed, capacity and strength produces heavier cuts, smoother work and a more profitable operation.

DIVIDEND DESIGN makes the Porter 405 Surfacer extra fast for surfacing at higher speeds. A matched "V" belt drive rotates the cutterhead at 6,000 RPM to assure clean, smooth, perfect work. This high speed is made practical by the newly designed chipbreaker which keeps the machine running free at all times.

DIVIDEND DESIGN permits heavier cuts on a Porter 405 Surfacer. Free and easy cutting action makes possible the use of an increased blade angle without increasing the size of the motor. This means greater surfacing capacity with no rise in power costs.

DIVIDEND DESIGN simplifies adjustment of a Porter Surfacer. The operator quickly varies the rate of feed even as the lumber moves through the machine.

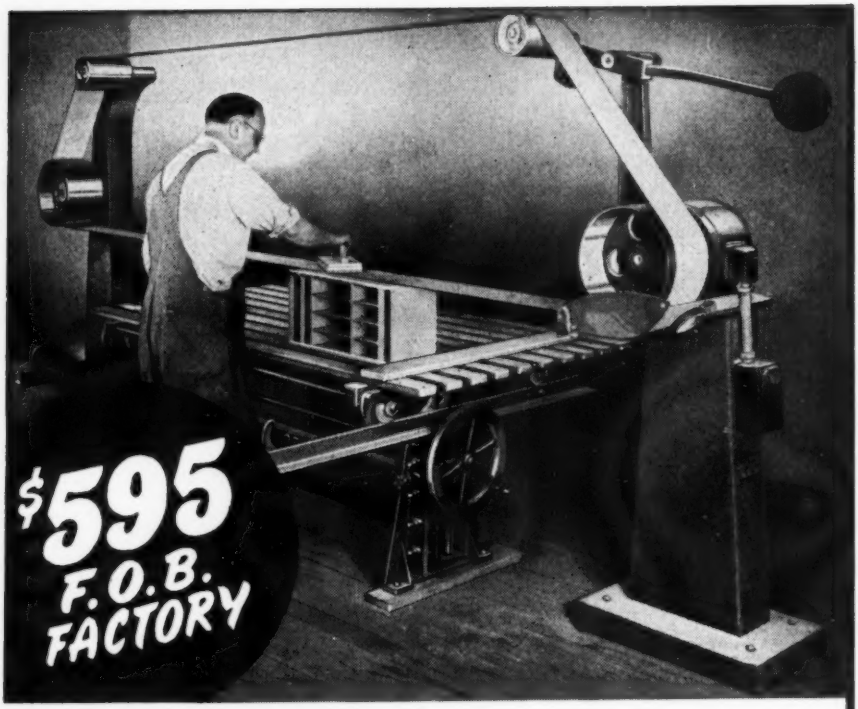
DIVIDEND DESIGN makes it easier to surface pieces of many different sizes and shapes. Individual magnetic controls prevent operation of the feed unless the cylinder is running. All rolls are power driven.

DIVIDEND DESIGN prolongs the life of a Porter Surfacer. It has the extra strength and extreme rigidity of welded steel, ribbed construction. This provides a durability achieved only with excessive weight with cast iron.

Write today for complete information on the advantages of Porter **DIVIDEND DESIGNED** *machinery*

C. O. PORTER Machinery Co.

668 Front Ave., N. W. Grand Rapids 4, Michigan



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Used by more than 1000 leading industrial firms because of its economical efficiency and its versatility. For sanding and finishing wood products and for buffing products fabricated from aluminum, brass, bronze, stainless steel and plastics. Heavy steel construction.

Write for Free Folder

BEACH

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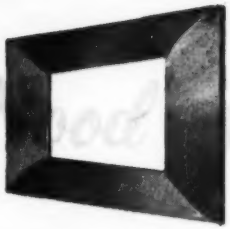

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Know Your Plastics

IT MAY MEAN BETTER AND FASTER PRODUCTION . . . AT LOWER COST!

When you investigate resins for your new or redesigned product, think first of BAKELITE Resins. The BAKELITE family of plastics and resins includes those in greatest demand. This gives you a wide selection, all from one supplier. The chances are that you will find the one material that is best suited to your production facilities, and also gives the best qualities to your product at the lowest possible cost.

This message deals with "BAKELITE" RESIN ADHESIVES

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Typical uses: Quality furniture, stock panel plywood.

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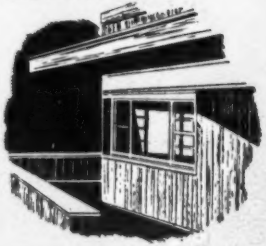
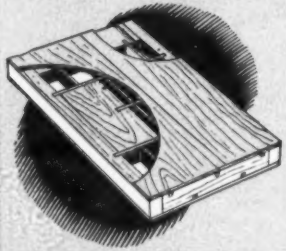
A general purpose, fully waterproof glue. For hot-press plywood. Meets CS35-47, Type I requirements. Great mechanical strength. Bond is insoluble, infusible, resists severe mechanical shock and fungi.

Typical uses: Exterior grade waterproof plywood, marine applications, densified wood.



BCU-28 LIQUID UREA RESIN



Highly water resistant, 65% solids, hot and cold press adhesive. Readily extendible, it meets CS35-47, Type II tests. Suitable for hot or cold pressing. A standardized product suited to familiar gluing techniques.

Typical uses: Flush doors, flat panels, lumber cores, furniture, plywood.

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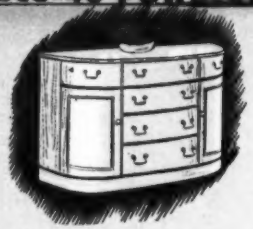
BCU-40 POWDERED UREA RESIN

A dustless, general purpose adhesive in specially compounded powder form. Highly extendible, it meets

More and more manufacturers are turning to Bakelite as the convenient single source for a

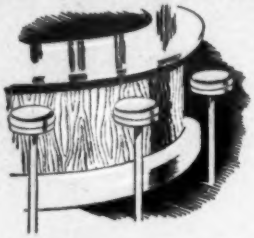
BCU-40 POWDERED UREA RESIN



A dustless, general purpose adhesive in specially compounded powder form. Highly extendible, it meets CS35-47, Type II tests. For hot and cold press.

Typical uses: Furniture, inside paneling, and stock panel plywood.

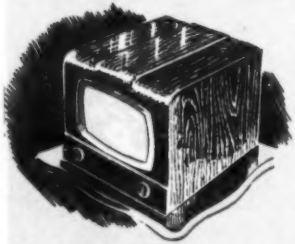
BCU-50 NEAT POWDERED UREA RESIN



A 100% urea resin adhesive. Highly water resistant, for hot or cold press. Meets CS35-47, Type II tests. Highly extendible. Suitable for hot or cold pressing.

Typical uses: Store fixtures, wall panels, plywood.

BCU-67 POWDERED UREA RESIN



Another powdered form of BAKELITE Urea Resin adhesive, with self-contained hardener. A general purpose dustless adhesive. Highly water resistant. Sets at room temperature. Meets CS35-47, Type II tests.

Typical uses: Assembly gluing, cabinet work, laminating solid wood assemblies for furniture; inside paneling, and stock paneling.

More and more manufacturers are turning to Bakelite as the convenient single source for a broad range of high quality, economical adhesives—urea, phenolic, and resorcinol. Glue buying from Bakelite is simple and *precise*. You simply make your selection according to type, solids content, performance, economy, and delivery. In addition, Bakelite field representatives—trained glue specialists—are located in major wood and furniture manufacturing centers. They are at your service to advise and assist you on ways to achieve the greatest benefits from BAKELITE Resin Adhesives. They welcome your inquiries. Write Dept. Q-27.

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TRADE-MARK
RESIN ADHESIVES

BAKELITE DIVISION
UCC

BAKELITE DIVISION, *Union Carbide and Carbon Corporation*, 30 East 42nd Street, New York 17, N. Y.

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Come to the 53rd Annual Convention, Cincinnati, Ohio
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• • •

PURPOSE OF THE ASSOCIATION

"To promote the welfare and to protect the interest of the hardwood trade; to establish, maintain and apply a uniform system for the inspection and measurement of hardwood lumber. It is not organized for profit and no part of its income may inure to the benefit of any member or private individual."

• • •

ARE YOU TAKING A FREE RIDE?

Here is a vehicle designed to serve your best interests, striving to do everything within its power, and within the law, to improve the conditions of your business but powered by your competitors who are working to advance your industry.

• • •

Here is an organization of business rivals united for the purpose of establishing fair grading standards as a basis of values in every competitive transaction, maintaining a staff of experienced and competent, impartial and disinterested inspectors to apply those standards when agreed to by both parties to a sale. "The hardwood trade would be in a continual fog", says a member, "were it not for the Association."

• • •

Membership dues are nominal. Inspection fees are at cost, or less.

• • •

"The core of the present crisis is a conflict of basic beliefs—a conflict between a community of free individuals determining their own destiny, and a community in which each human thought and action are degraded to a condition of complete subservience to the State." (Reuel W. Elton)

• • •

Write to the following address for further information about membership.

• • •

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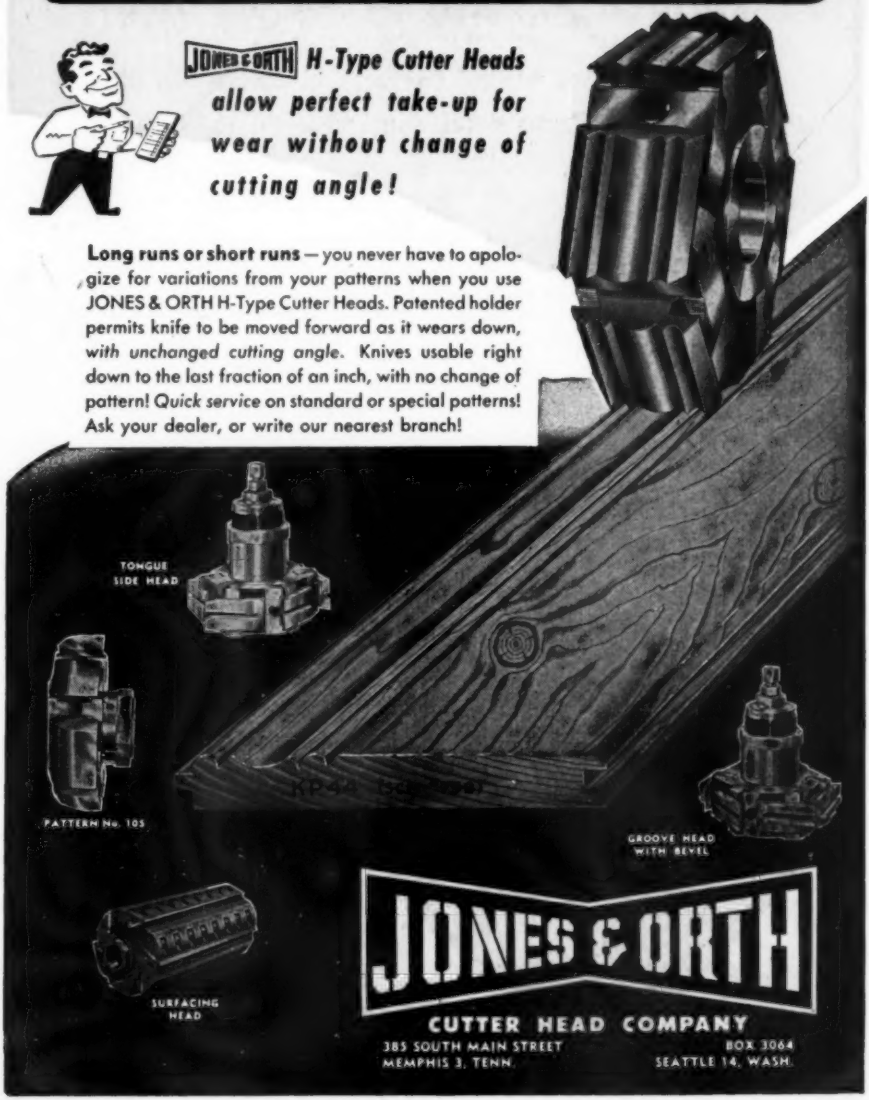
59 East Van Buren Street Chicago 5, Illinois

FRANK W. HUTCHESON, President JOHN W. McCLURE, Secretary-Manager

More Footage From J&O Heads and Every Foot True to Pattern!

JONES & ORTH H-Type Cutter Heads allow perfect take-up for wear without change of cutting angle!

Long runs or short runs — you never have to apologize for variations from your patterns when you use JONES & ORTH H-Type Cutter Heads. Patented holder permits knife to be moved forward as it wears down, *with unchanged cutting angle*. Knives usable right down to the last fraction of an inch, with no change of pattern! *Quick service* on standard or special patterns! Ask your dealer, or write our nearest branch!

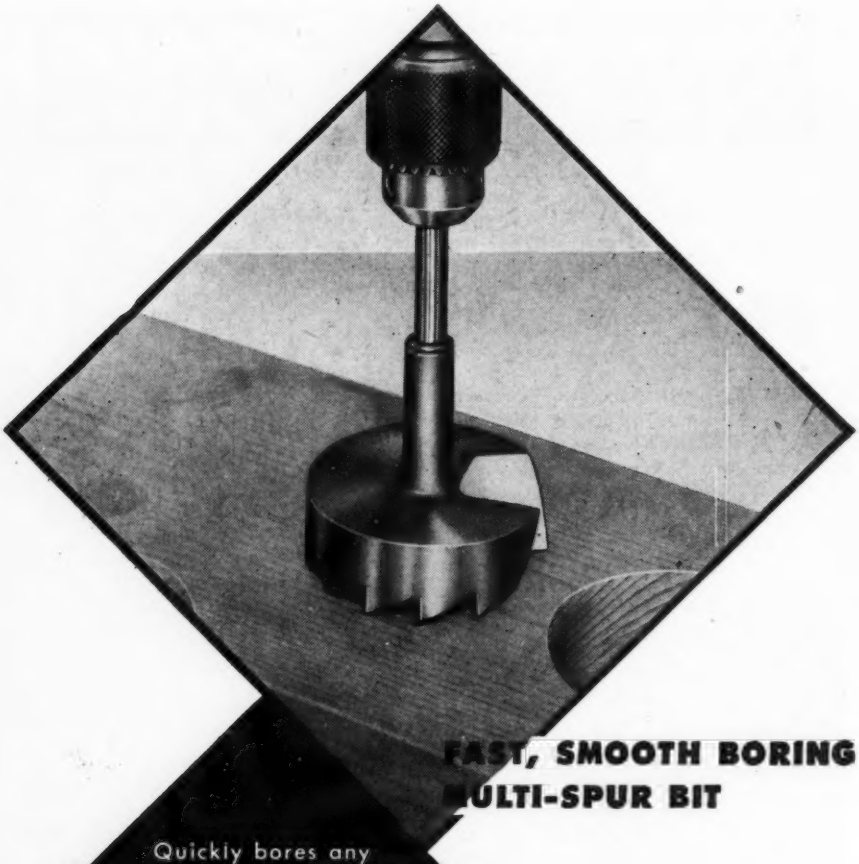


JONES & ORTH

CUTTER HEAD COMPANY

385 SOUTH MAIN STREET
MEMPHIS 3, TENN.

BOX 3064
SEATTLE 14, WASH.



FAST, SMOOTH BORING MULTI-SPUR BIT

Quickly bores any arc of a circle in hard or soft woods. And for both cross and end-grain work bores holes at an angle, overlapping, or at close centers without danger of stock splitting.

FREE BORING CHART for wood screws with specifications to simplify bit or drill selection. Write today to Greenlee Tool Co., Division of Greenlee Bros. & Co., 2138 Herbert Avenue, Rockford, Illinois, U. S. A.

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MULTI-SPUR BITS • ROUTING BITS • COUNTERSINKS • PLUG CUTTERS • DRILLS

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7½' 40 section Taylor Clamp Carrier filled with 160 glued units of work. This machine is equipped with 42" clamps. Above installation photographed at Setter Bros., Cattaraugus, N. Y.

How nicely this Taylor fills the niche it occupies! A Taylor uses the very smallest floor space.

Imagine the 160 units of work with which this machine is loaded, piled with clamps attached, on the floor or on trucks around your glue room! The Taylor really does make your glue room larger. Neat! Condensed! Logical!

Remember, too, that if hand clamps were employed, two clamps would be required for each unit.

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You can count on saving at least half the cost of your hand clamp gluing.

Send for booklet, "The Story of Edge Gluing."

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Poughkeepsie, New York

"I entered 'The Finger's' apartment and found him hanging onto life by a thread. The gruesome carnage was all the evidence I needed to tell me he had been criminally assaulted from sanding parts by hand. Yet, the solution is so simple: Had he used a Sand-O-Flex contour sander, there would have been no case for the Silicon Squad, nor would 'The Finger' have strayed from the straight and marrow."

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Reduce Shaping Costs . . .

WHITNEY

HIGH SPEED PRODUCTION

SHAPERS

Illustrated is the Whitney No. 91 Double Spindle Shaper. There is a size and model (single or double spindle) Whitney Shaper for every shaping job.

Quality production and lower shaping costs result from the smooth operation of these high speed, motor driven shapers. The high speed spindles are belt driven direct from individual motors mounted on the base of the shaper. No frequency changer is required.

Long life, trouble-free performance and low upkeep cost make these production shapers decided favorites wherever fine hand shaping is required in large or small quantities.

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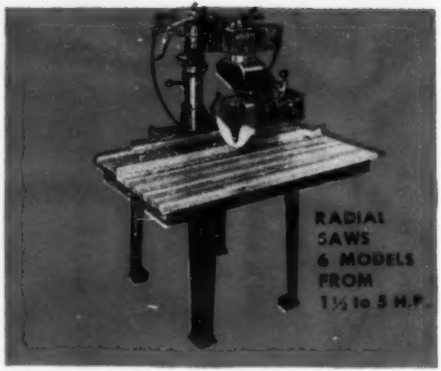
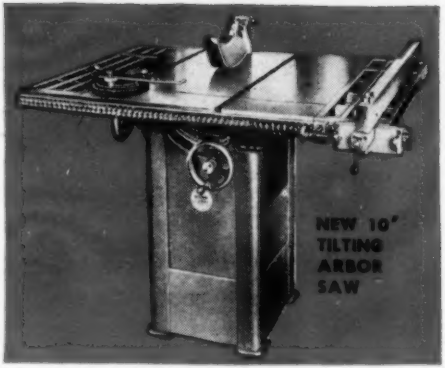
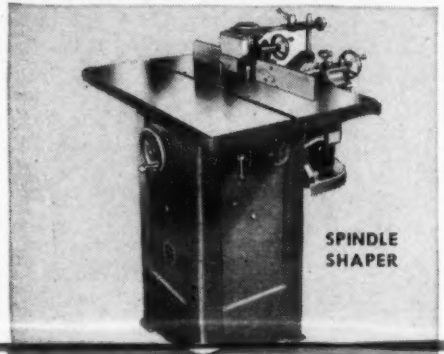
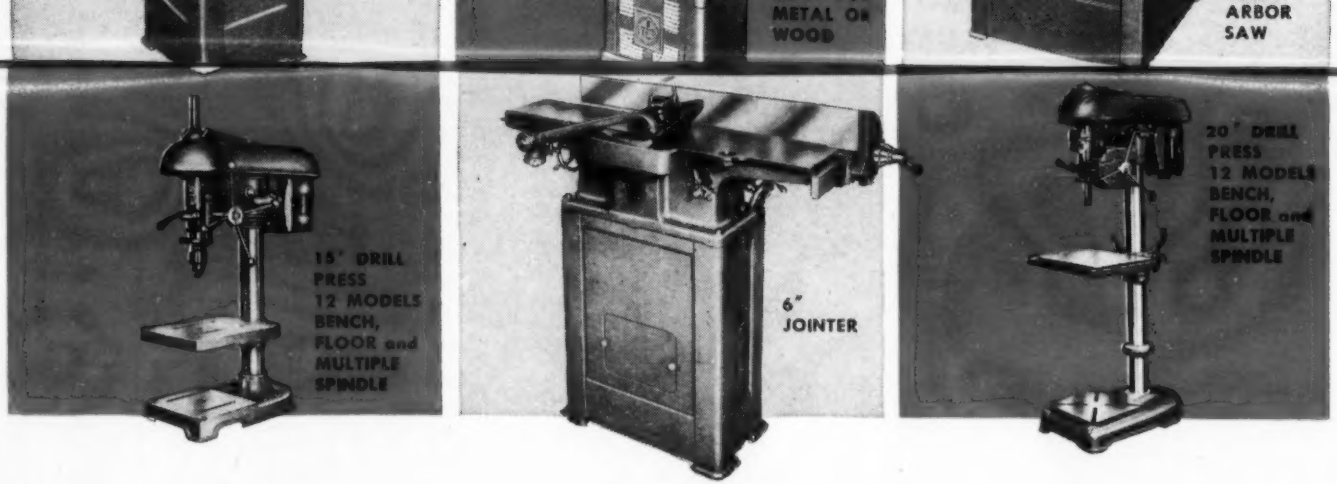
WINCHENDON, MASSACHUSETTS, U. S. A.

A model to fit your needs...





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6" JOINTER
20" DRILL PRESS 12 MODELS BENCH, FLOOR and MULTIPLE SPINDLE

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MILWAUKEE
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PLAINFIELD, NEW JERSEY

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SOLD ONLY THROUGH AUTHORIZED DEALERS

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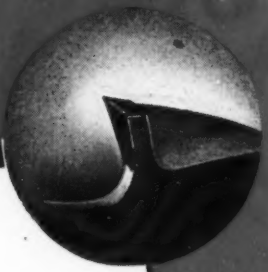
USE



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Carbide

TIPPED SAWS

IT'S THE TIP THAT COUNTS

LOOK FOR THIS EMBLEM ON EVERY SAW BLADE

for

ALL YOUR SAWING OPERATIONS

When you use *"Long Life"* Carbide Tipped Saws you save time and money by having **LESS DOWN TIME** on your machines, you get **SMOOTHER CUTTING** and add to the profits of your operations by having **LOWER SHARPENING COSTS.**

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LONG LIFE Carbide TIPPED SAWS Saw & Tool Co.

Phone WEbster 9-4430

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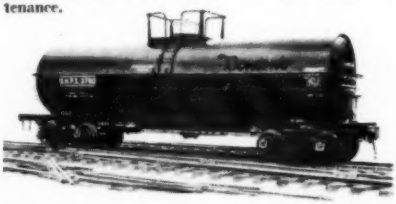
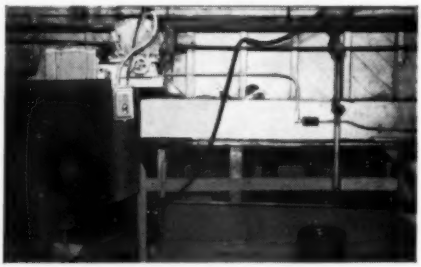
You don't have to buy carloads of resin to get Borden's bulk-shipment savings. Borden delivers as little as 2500 lbs of liquid urea resin, by tank truck, to local customers.

And when Borden Engineering Service plans your tank storage facilities, you get the advantage of over four years' experience in bulk delivery of resin glues to plywood and furniture plants on the West Coast and in the East and South. That's why Borden-planned installations are low in cost and maintenance.



Plant photographs courtesy of Vermont Plywood, Inc., Hancock, Vermont

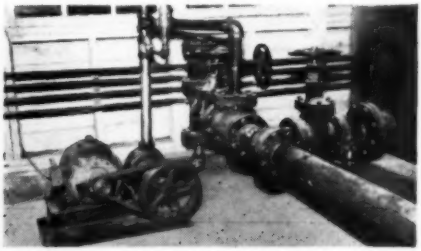
Borden Engineering Service surveys your particular glue needs and plant set-up . . . plans tank storage installations from $200 to $6000.



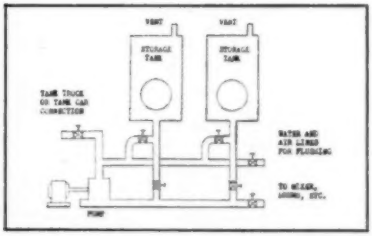
No handling of resin. The glue is moved by pump . . . from truck to tank to mixer. No handling of heavy drums. Cuts waste, saves money. A typical tank storage installation is shown at right.

Borden tank trucks have their own unloading pumps. No tie-up of customer's equipment. Quick delivery of 2500 to 20,000 lbs of resin per trip.

←**For distant shipments,** tank cars deliver up to 80,000 lbs of liquid resin. Low solids CASCO-RESIN No. 30 insures long storage life.

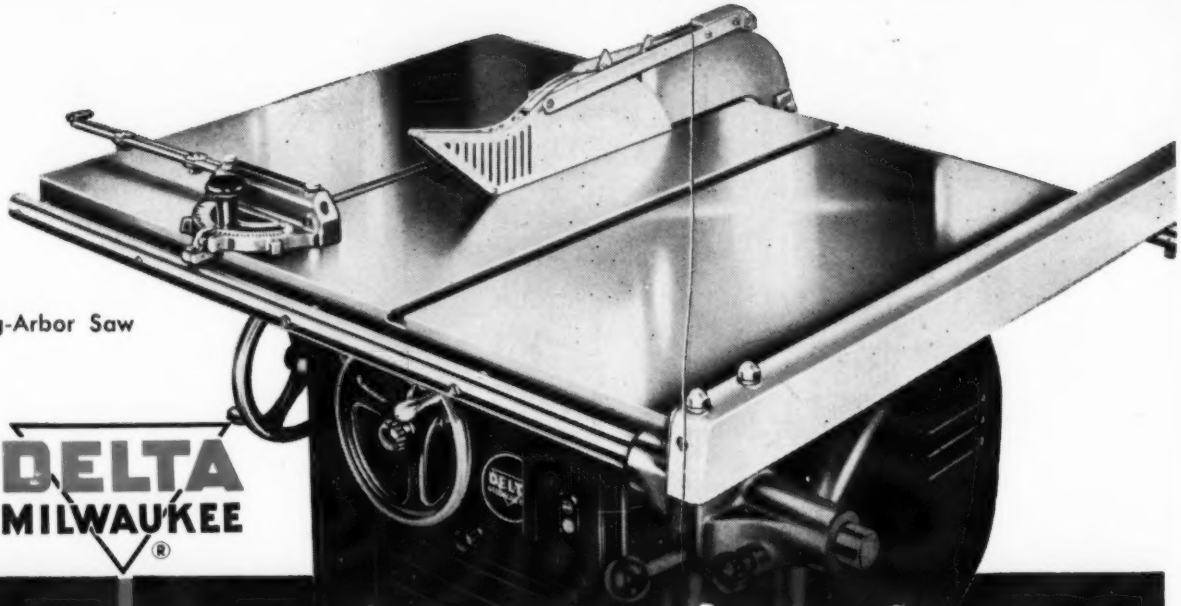


Tanks, pumps, piping are all specified for you. Use your own or contract labor for setting up the equipment.



If you use liquid urea resin glue, let a Borden Plant Engineer draw up a practical bulk-storage plan for your plant . . . at no cost to you. Write today.

THE BORDEN COMPANY
Chemical Division
Dept. WD-80, 350 Madison Avenue, New York 17, N.Y.



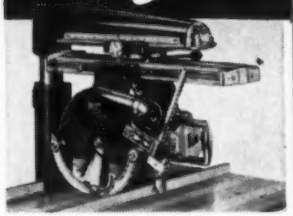
12" Tilting-Arbor Saw

DELTA
MILWAUKEE
®

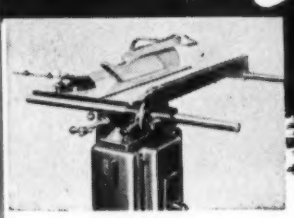
Big tables, big cuts, big choice...

Delta®

...the most complete saw line



Multiplex Radial-Arm Saw

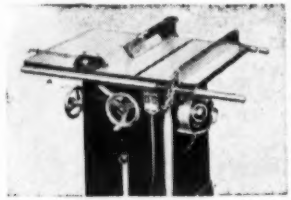


10" Tilting Table Saw

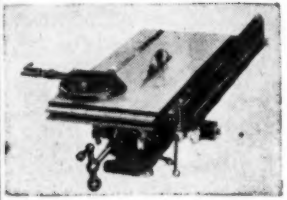
DOES your work require a circular-saw table as big as 4 feet by over 3 feet? Do you have to saw stock that's 4⅛" thick? Or just what-size circular saw *do* you need? Whatever you need, just remember — the Delta line can meet your exact require-

Multiplex Radial-Arm Saw

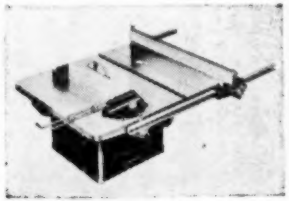
10" Tilting Table Saw



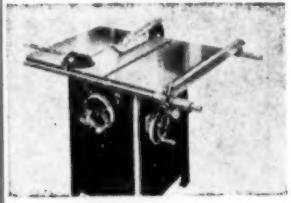
10" Tilting-Arbor Saw



8" Tilting-Table Saw



8" Tilting-Arbor Saw, bench model



8" Tilting-Arbor Saw, floor model

Motor and switch extra Prices subject to change without notice *Plus zone delivery charge

DOES your work require a circular-saw table as big as 4 feet by over 3 feet? Do you have to saw stock that's 4⅛" thick? Or just what-size circular saw *do* you need? Whatever you need, just remember — the Delta line can meet your exact requirements. It's really complete . . . complete in range of table sizes and in cutting capacities. That's why we can say, there's a Delta circular saw that's right for any job you have!

Yes, in circular saws — as in other metalworking and woodworking machines — Delta has the right tool for your job. It's the most complete line available — the only line with complete accessories to make every machine more useful. And, in every Delta Circular Saw, you get famous Delta quality that assures you of long-time satisfaction.

Write for catalogs and bulletins on the entire Delta line.

DELTA POWER TOOL DIVISION

Rockwell

Manufacturing Company

MILWAUKEE 1, WISCONSIN

DELTA • MULTIPLEX • CRESCENT • HOMECRAFT

Sold only through authorized dealers. Easy time-payments!

Look for the name of your Delta dealer under "Tools" in the classified section of your telephone directory.

Plus a complete selection of:

3 Band Saws — Scroll Saw — 4 Jointers — 11 Drill Presses

5 Grinders . . . 3 Welders . . . 2 Shapers . . . 4 Radial Arm Saws . . : 2 Abrasive Finishing Machines . . . 3 Cut-Off Machines . . . Lathe . . . 2 Saw-Jointer Combinations . . . 2 Planers . . . 2 Buffing Machines.

53 Machines – 246 Models

1300 ACCESSORIES

Tear out coupon and mail today!

Delta Power Tool Division
ROCKWELL MANUFACTURING CO.
660H E. Vienna Ave., Milwaukee 1, Wis.

Send me free catalogs and bulletins on the complete Delta line.

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Company.....

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City.....(.....) State.....

W-61

If You're Working in WOOD, METAL or PLASTICS

There's a* SUNDSTRAND *Portable Pneumatic Sander To Suit The Job

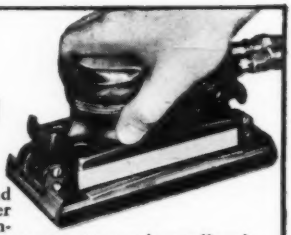
Here are three Sundstrand Sanders that will handle countless sanding jobs on wood, metal or plastics . . . on production or maintenance work. All three have straight line reciprocation, making it easy to follow grain structure and effecting superior finish. Vibration of all three sanders is reduced and operator's fatigue minimized.

Before buying any portable sander, investigate the savings possibilities of these Sundstrand Portable Pneumatic Sanders.

FREE DATA

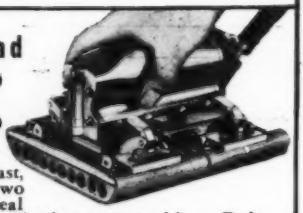
Investigate the savings possibilities of Sundstrand Portable Pneumatic Sanders. Write for bulletin W-56.

Single Pad
Model 100



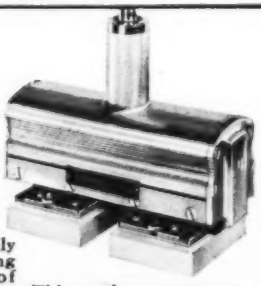
A new Sundstrand Single Pad Sander which can be handled easily by women operators or in small and confining areas. Has straight line variable pad reciprocation ranging from 1,500 to 3,000 oscillations per minute. Pad movement is counterbalanced to eliminate vibration. Can be guided with practically no effort.

Double Pad
Model 1000 and Model 4000



Here's a light, fast, easy to handle two pad sander, ideal for wood, metal, plastic or composition. Pads reciprocate in opposed directions at 3,000 oscillations per minute . . . has abrasive area two to three times larger than hand blocks. Operates on 65 to 90 lbs. air pressure . . . applicable to both wet or dry sanding. Model 1000 weighs less than 6 lbs. and has stroke length of 1/2 inch. Model 4000 has 11/16" stroke and weighs approximately 9 lbs.

Heavy Duty Model



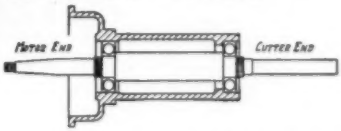
Designed primarily for pumice rubbing and sanding of large, flat surfaces. This sander operates at a speed of 1,100 oscillations per minute on an air pressure of 80 lbs. The machine weight of approximately 30 lbs. supplies necessary pressure for fast, uniform sanding or rubbing.

SUNDSTRAND MACHINE TOOL CO.
PNEUMATIC MACHINE DIVISION
ROCKFORD, ILLINOIS, U.S.A.

Heavy cuts . . .
High speeds . . .
Precise work . . .

The DIEHL-VONNEGUT 12" 4-head, all-electric Moulder. Also offered in 4", 6", 8", 10" and 12" 5-head sizes.

Compare rigidity of this Diehl-Vonnegut spindle design with that of conventional designs. Note enlarged center spindle section. Permanently attached outboard bearing is standard on 12" Moulders.



• No spindle whip at faster speeds . . . no spindle whip with heavier cuts. This **vibration-free** performance of the exclusive Diehl-Vonnegut Moulder **Spindle** is one of several reasons why this machine is the standard for the industry.

The Diehl-Vonnegut Spindle is designed so all power is transmitted through the **enlarged** middle spindle section which provides ample means to resist torque and also prevents any shock of cutterhead impacts from being transferred to the rotor end. This contributes to the accuracy of both cutterhead and rotor rotation. Since this design stiffens the spindle ends and prevents spindle whip, it also extends the wear-life of your machines and tools.

If you have never seen a Diehl-Vonnegut Moulder in action, your Diehl representative will gladly show you one. Write today for his name, or ask for literature on the size moulder you need.

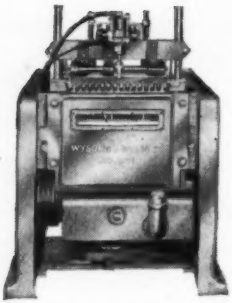
OTHER DIEHL PRODUCTS—Rip Saws & Cut-off Saws . . . Veneer Splicers . . . Veneer Jointers . . . Tapeless Splicers . . . Glue Jointers & Edge Moulders . . . Edge Gluing Machines . . . Cutters & Cutterheads . . . Cutter Grinders . . . Saw Sets . . . Glue Pots . . . Specially Engineered Conveyor Systems

THE G.M. **Diehl** MACHINE WORKS, INC.

On the Banks of the Wabash

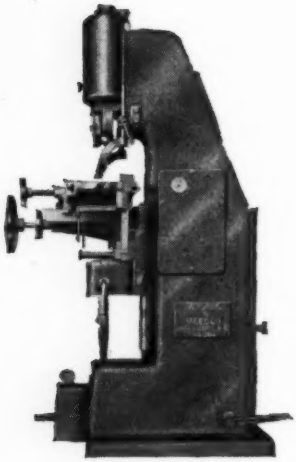
WABASH, INDIANA • U.S.A.

No. 604 Edge Belt Sander
Oscillating and Non-oscillating
models



No. 601 Automatic Dovetailer,
for fronts and backs.
Companion machine No. 600,
for drawer sides.

Unmatched PERFORMERS



No. 284 Automatic
Hollow-Chisel Mortiser.

AUTOMATIC DOVETAILERS
Increase production up to 85%. Cleaner, better fitting dovetails.

HYDRAULIC STROKE SANDERS
Single belt and double belt, reversible. Give smoother finish and increase production.

BELT SANDERS—EDGE BELT SANDERS
8 models to choose from.

DISC & SPINDLE SANDERS
4 models to choose from.

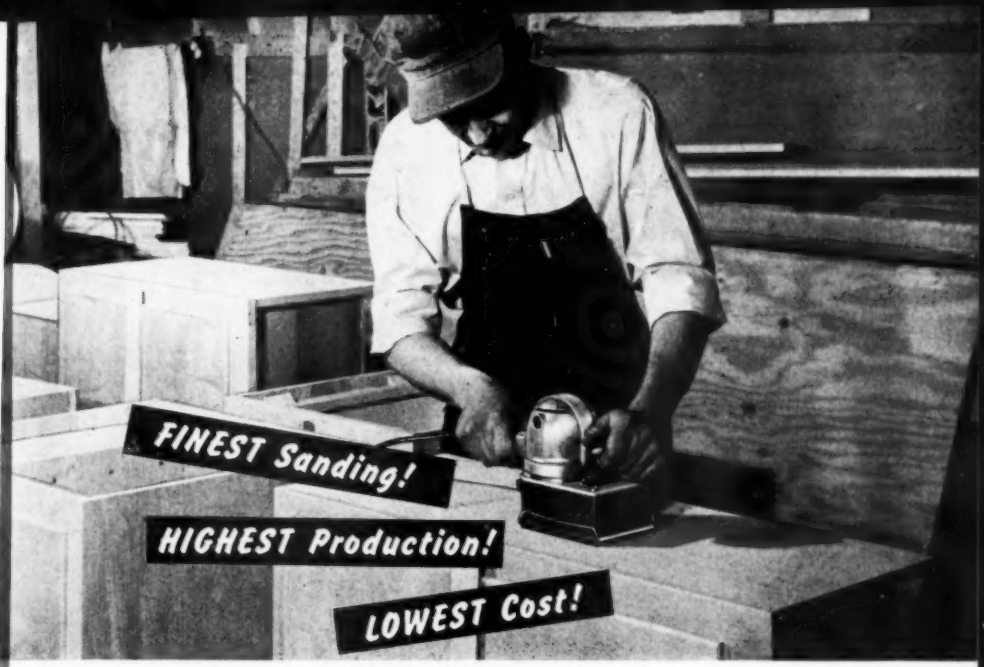
AUTOMATIC MULTIPLE MORTISER WITH HYDRAULIC FEED
The finest mortiser built.

SINGLE SPINDLE MORTISERS
Automatic or with foot feed.

See your dealer or write to the factory for full information. Each Wysong and Miles machine is backed by 50 years experience in the manufacturing and design of woodworking machines.

WYSONG and MILES Co.

GREENSBORO, NORTH CAROLINA



At $87.50 you can't beat SKIL Oscillating Sander for performance and for price!

Model 438 SKIL Oscillating Sander more than pays for itself in a very few days. Look at these features! Try it yourself and see why!

TWO-WAY ACTION for fast cutting, smooth finishing! With famous SKIL Sander compound motion, front edge cuts *fast* with circular motion; trailing edge sands *satin-smooth*, working back-and-forth *with* the grain.

NEW QUICK-CLIP PAPER CLAMP for speedy paper changes! Simplest, surest paper-holding device ever made. Nothing to adjust! Nothing to get out-of-order! You change paper *in seconds* . . . waste no sanding time.

NO TIRING VIBRATION . . . easiest to use! New design cuts vibration to the absolute minimum. See for yourself how quietly it runs. Smooth operation cuts operator fatigue . . . increases production.

SANDS RIGHT INTO CORNERS without danger of marring! Optional method of paper attachment permits sanding into recesses of door panels, tables, etc. No metal to scratch or mar finest surfaces. You get perfect sanding in every spot.

WANT ADDITIONAL PROOF?

Ask your SKIL Tool Distributor for a *convincing* on-the-job demonstration of SKIL Oscillating Sander. Phone him *today!*

SKIL Products are made only by

SKILSAW, INC.
5033 Elston Avenue, Chicago 30, Ill.
Factory Branches in Principal Cities
In Canada: SKILTOOLS, LTD.
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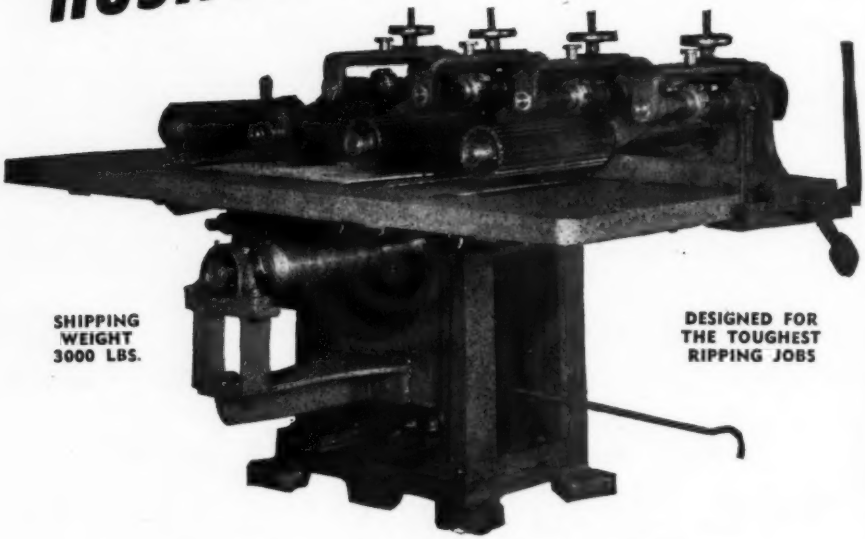
SKIL PORTABLE TOOLS

MODEL 438

A REAL HUSKY...

NO. 213 HOOSIER SELF FEED RIP SAW



SHIPPING WEIGHT 3000 LBS.

DESIGNED FOR THE TOUGHEST RIPPING JOBS

FOR QUICK OPERATION - DEPENDABLE PERFORMANCE

This sturdy unit is designed specifically for high speed ripping of stock longer than 24" and as a gang ripper for stock as short as 12". The No. 213 is equipped with a stationary table top having all feed works brackets bolted to the top—as is the gear reduction drive. The mandrel rides on ball bearings and is raised and lowered quickly by a hydraulic cylinder. Eight driven rolls feed the stock through the saw at high speed. A 50 H. P. motor drives this unit at full capacity. The No. 213 is a real workhorse, built to handle your toughest jobs.

Available for direct motor, V belt or flat belt drive.

SINKER-DAVIS *Company*

230-250 SOUTH MISSOURI ST. DEPT. 0 INDIANAPOLIS, INDIANA

You benefit from this dramatic new campaign in the

THE SATURDAY EVENING POST

Public urged to look for Phillips Screws — the clue to quality . . . found on all modern products

BEGINNING AUGUST 26, a striking campaign on Phillips Screws will be launched in The Saturday Evening Post. Aimed at the general public, it will tell 14 million readers to look for the mark of extra quality in well-built products . . . *the identifying X that appears on the head of Phillips Cross-Recessed-Head Screws.*

Whether you use Phillips wood screws, machine screws or tapping screws, you benefit from this forceful quality story. Remember, too, when you use Phillips Screws you build a better product . . . save time, money, work-hours.

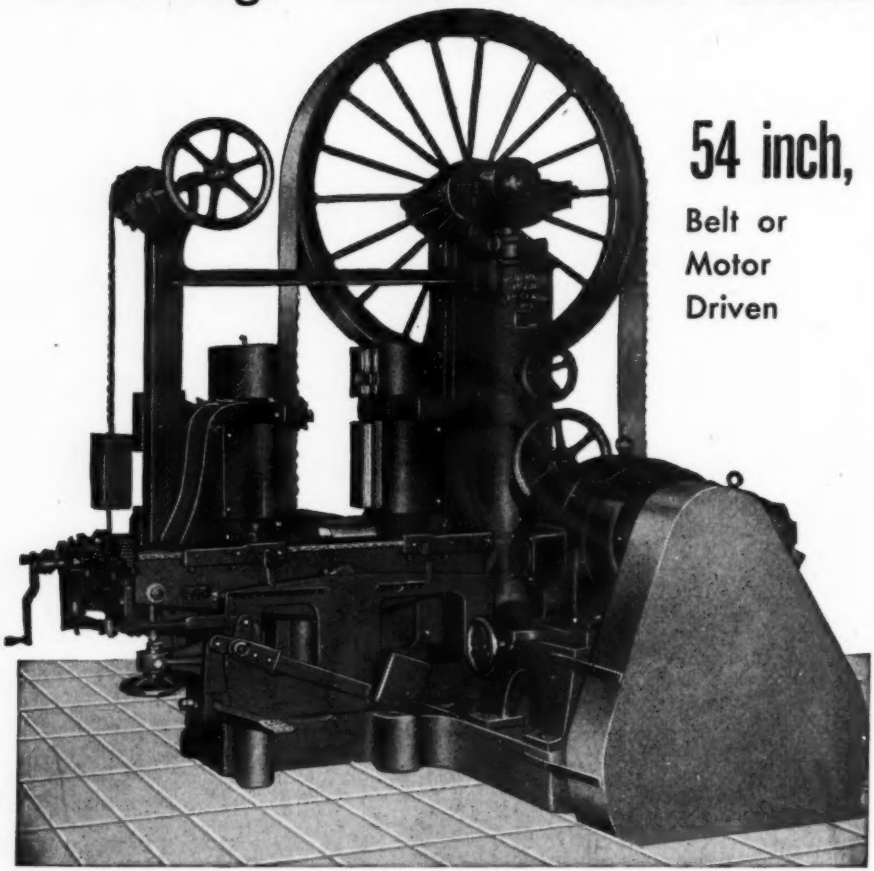
Be sure to put the "clue" to extra quality in your product.

PHILLIPS *Cross-Recessed-Head* **SCREWS**

X marks the spot . . . the mark of extra quality

AMERICAN SCREW CO. • THE BLAKE & JOHNSON CO. • CAMCAR SCREW & MFG. CORP.
CENTRAL SCREW CO. • CONTINENTAL SCREW CO. • ELCO TOOL & SCREW CORP.
GREAT LAKES SCREW CORP. • THE H. M. HARPER CO. • NATIONAL LOCK CO. • PARKER-KALON CORP.
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.
SHAKEPROOF INC. • THE SOUTHINGTON HDWE. MFG. CO. • WALES-BEECH CORP.

McDonough VERTICAL BAND RESAW



54 inch,

Belt or
Motor
Driven

New Model! New Features! Same Price!

- ✓ Speedranger drive for feed rollers. 25 — 225 lin. ft. per min.
- ✓ Heavier wheels.
- ✓ Larger shafts and bearings.
- ✓ Immediate Shipment.

WORLD'S LARGEST MANUFACTURER OF BAND RESAWS

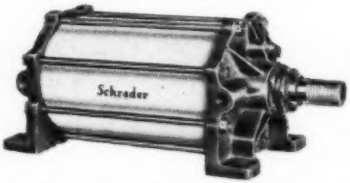
McDonough Manufacturing Co.
Incorporated 1888 — Eau Claire, Wisconsin

ARE YOU IN ANY ONE OF THESE 3 GROUPS?

- ☐ I have never used compressed air in connection with woodworking.
- ☐ I have made some use of compressed air for woodworking but do not know all of its possibilities.
- ☐ I know nothing about the application of compressed air to woodworking.

If you are in any one of these 3 groups, learn how you can save time and money with compressed air devices, and the increases you can realize in production and safety.

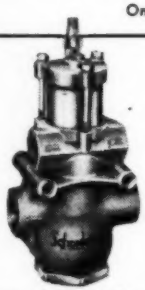
Here are a few of the hundreds of new and improved Schrader Air Control Products. Schrader distributors will gladly show you how you can benefit through their use.



One of Many New Air Cylinders

One of the New Air Clamps

New Hand Lever Valve



Improved pilot valve for remote control—can be timed.

New quick exhaust valve for emptying cylinders rapidly. Speed up cylinder operation.

Air Line Lubricator for automatically lubricating cylinders, chucks, clamps, etc.

Air Pressure Regulator for reducing air pressure and holding it uniform.

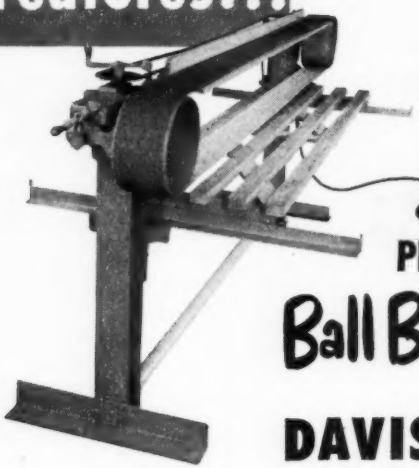
Write for complete information and literature on Schrader Air Cylinders, Valves, Air Line Lubricators, etc. If interested in hundreds of other Schrader Products such as Blow Guns, Hose Reels, Air Line Couplers, Press Controls, etc., write for 72-Page Catalog.

Schrader
PRODUCTS CONTROL THE AIR

A. SCHRADER'S SON

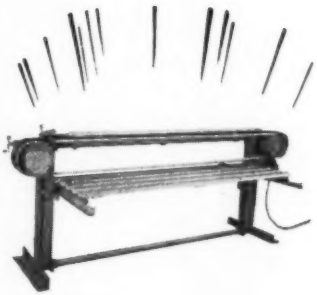
502 Vanderbilt Ave., Brooklyn 17, N. Y.
Division of Scovill Manufacturing Company, Incorporated

Many Top Features...



New PRECISION BUILT Ball Bearing Sander by DAVIS AND WELLS

Check this one. Here is a top rated ball bearing belt sander by Davis & Wells, priced very low in relation to its many excellent features. This sander takes a 6" wide belt. Ball bearings are sealed in lubrication. Table assembly floats on ball bearing rollers, has full adjustment range for flat sanding under belt. To fit your needs a variety of table sizes are available. The point is: this Davis & Wells Belt Sander is a low cost investment for your shop, with a high-grade return. Another fine, new member in the famous Davis & Wells line of woodworking machinery. Full details in free literature sent on request.



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CONSOLIDATED MACHINERY & SUPPLY CO., LTD.

2029-33 Santa Fe Avenue, Los Angeles 21, California

PENACOLITE® RESORCINOL ADHESIVES

provide permanent bonding in manufactured houses

A COMPLETE HOME comes off the assembly line every 25 minutes at the Gunnison Homes, Inc., plant in New Albany, Indiana. Though these homes are turned out rapidly they are constructed to last for years and years. They will withstand the extremes of heat and cold, dampness and dryness and wind loads of 200 mph. Part of the lasting strength of these houses can be attributed to the Penacolite Resorcinol Adhesives used in bonding both exterior and interior panels to the studs . . . they form bonds stronger than the wood itself!

Penacolite adhesives are unaffected by condensation, molds, fungi, organic solvents and weather. They help speed production too . . . they cure in a few hours at room temperatures (70°F. or above) and in a few minutes under accelerated heat. No strong catalyst is needed. And pressures as low as 25 p.s.i. are often sufficient.

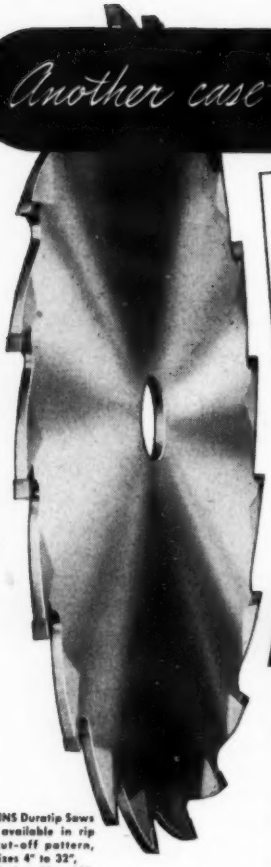
In *all* wood bonding—large or small, curved application or straight—Penacolite adhesives give a bond that stays. If you have a bonding problem, chances are Koppers can help you solve it . . . economically, too. Write today for complete information about Penacolite Resorcinol Adhesives.

KOPPERS COMPANY, INC.
Chemical Division, Dept. WWD-8, Koppers Building, Pittsburgh 19, Pa.

KOPPERS

PENACOLITE RESORCINOL ADHESIVES

Another case study from the Atkins files



CASE STUDY

SAW:	Two 8" Duratip Grooving Saws--20 teeth, 1/4" Kerf. Operating at 4,000 RPM.
MATERIAL:	Cross grain oak and maple flooring
OPERATION:	End grooving
PRODUCTION:	15,000 pieces or cuts each per day, 5 1/2 days per week or approximately 80,000 cuts each per week.
INTERVAL BETWEEN SHARPENINGS:	On maple flooring, 5 weeks or 400,000 cuts (one saw) On oak flooring, 6 weeks or 480,000 cuts (one saw)

880,000 CUTS
COMBINED OUTPUT OF TWO DURATIP SAWS BETWEEN SHARPENINGS— CUTTING CROSS GRAIN OAK AND MAPLE FLOORING

ATKINS Duratip Saws are available in rip or cut-off pattern, sizes 4" to 32", stock sizes 8" to 18".

ATKINS *DURATIP* SAWS

Trade Mark Reg. U.S. Pat. Off.

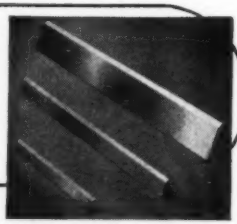
Whether you saw hardwood flooring or *any* of these . . . soft woods, Masonite, impregnated materials, building boards, plywoods or laminates . . . ATKINS Duratip Saws can help you reduce your sawing costs!

With teeth tipped with the toughest, hardest alloy ever developed for rip or cut-off saws . . . tooth and gullet shape scientifically correct for high-speed cutting with least resistance . . . clearance ground to run cool . . . ATKINS Duratips are specifically designed to achieve faster, lower-cost cutting on continuous production runs. Tell your distributor you want ATKINS Duratip Saws.

Companions in performance:

ATKINS PLANER KNIVES

The knives that have earned a reputation for increasing machine and man-hour output . . . for cutting faster—longer—with less time-out for sharpening. Try ATKINS "Silver Steel" Knives and measure the improvement in performance! For all round head or square head machines.



There's an ATKINS Planer Knife for every planing job. Shown are ATKINS Thin "Silver Steel" High-Speed Knives.

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THE PRECISION PLANER

There is NO SUBSTITUTE for Quality! Price alone is never a true gauge of value. Power Planers offer PREMIUM VALUES at standard prices. Eighty-three years of quality manufacturing back our claim to PRECISION WORKMANSHIP. Thousands of satisfied users are our best advertising. The Model 380 Planer is modern—rugged—compact—safe—but, most of all, it's TOPS IN PLANING.

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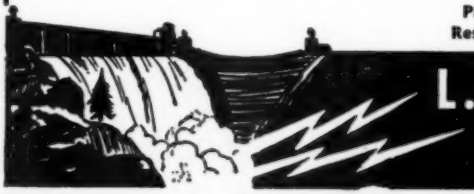

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MARION MODEL "M"

PREFERRED! Here's what users are saying about this Modern Straight Line Glue Joint Rip Saw

Youngstown Cabinet Works, Inc.
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"The Marion Model M has paid for itself in both time and labor during the short period of time it has been in operation in our shop. The maintenance of this machine is very low. In plain words, this machine is a honey."

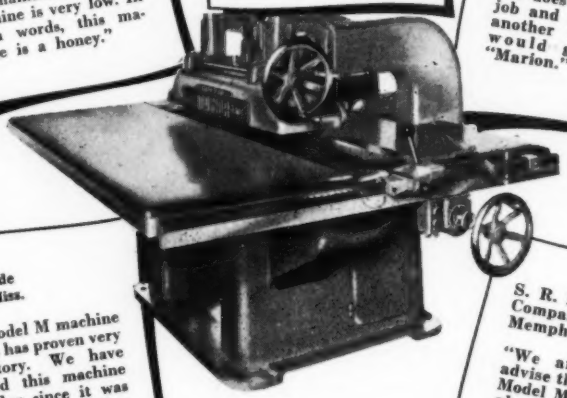
Thomas Graham & Company
Madison, Ind.

"We wish to state that our Marion Saw has been very satisfactory."

Forest Products Manufacturing Co., Inc.
Jasper, Indiana

"We are well pleased with the Model M Straight Line Glue Joint Rip Saw and the service rendered after we had it installed in our plant.

"It does a wonderful job and if we needed another rip saw we would get another "Marion."



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"The Model M machine we have has proven very satisfactory. We have operated this machine every day since it was purchased, and it has not given one minute of trouble."

New and exclusive features insure precision performance for users of Marion Model M.

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"We are pleased to advise that the Marion Model M straight line glue joint rip saw has performed very satisfactorily."

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● *There is no substitute for carrying the stock past the saw blade in a straight line. The MARION MODEL M is the only straight line, glue joint rip saw designed in that belief—that is why we are sure if you*

Compare . . . YOU WILL ***Insist*** ON A ***Marion***

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MARION MACHINE, FOUNDRY and SUPPLY COMPANY

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NC No. "5000" liquid joint glue.
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These are just a few of National Casein's glues as formulated to meet the needs of the most exacting glue buyers. N.C.C. has **the right glue for every conceivable woodworking job. We challenge you to stump us. WE HAVEN'T FAILED YET.**

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Auto-Nailer not only does the nailing of from 3 to 5 men, it practically *ELIMINATES WASTE*. It makes, drives and sets 3 nails per second—in all materials. Has quick, accurate settings for nail length and countersink.

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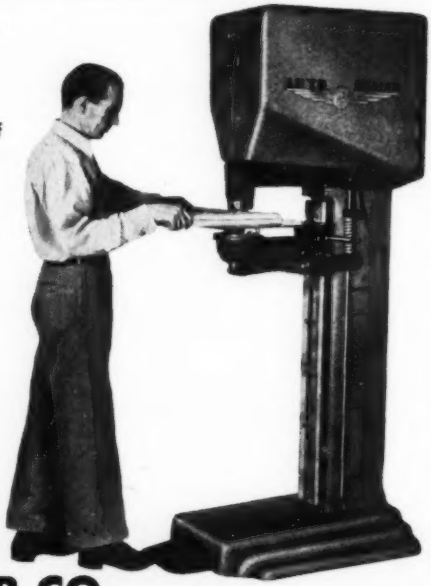


THE AUTO-NAILER CO.

267 MARIETTA ST., N. W. • ATLANTA, GEORGIA

NOW is the Time

Sooner or later, we all knew that Communism and Democracy would tangle. Now is the time when they have.

However, during the long time of waiting, not knowing where and when the clash would come, suspense has done its best to give us a bad case of the jitters. At this writing the Korean situation does not look encouraging. We sincerely believe that Democracy and Freedom will triumph, but the way may be long and painful. Now is the time to shorten that way.

The easiest thing to do right now is to criticize our administration, attempting to lay the blame on a governmental doorstep. Freedom of speech permits our doing so, but most important at this time is our cooperation in what lies ahead. Our inability or unwillingness to show what our industry can do, may be regarded as a form of sabotage. Therefore, it remains for us to do again the fine job we did in the last war, and now is the time to begin.

Fortunately, we are better prepared with materials, machinery and methods. However, it would be well for you to give your own plant an evaluation, being certain that this generalization includes you. If you need new machinery, now is the time to buy it. Check on the man and woman power available. Be prepared for any eventuality that Freedom and Democracy may live and win. Now is the time to make the belief reality.

NED BAILEY
Editor-in-Chief

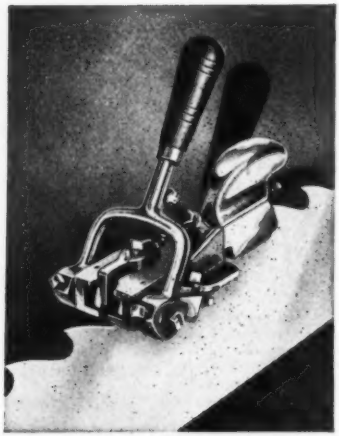
Talk to the men who use them :

HANCHETT
No. 10 BAND SWAGE SHAPER
No. 36 BAND SAW SWAGE

When you talk to men who use these two great tools, you'll find unusual enthusiasm. Most often, expert saw fitters praise these Hanchett characteristics:

1. Unusual ease of adjustment
2. Natural "feel" and balance
3. Sensitive, precise action
4. Wide range of adjustment
5. Simplicity — with rugged strength

Hanchett **MATCHED EQUIPMENT** for the Saw Mill and Lumber Industries leads the field in outstanding quality and performance. For full details, write for Bulletin **WWD-80.**



No. 10 Band Swage Shaper

No. 36 Long Die Band Saw Swage

COVEL SAW SHARPENERS • HANCHETT KNIFE GRINDERS

Hanchett Manufacturing Co.

World's Largest Manufacturers of Saw Sharpening and Knife Grinding Machinery

Main Office — BIG RAPIDS, MICHIGAN
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Pointed Paragraphs

New product — end-grain flooring tiles from slabs and other waste wood materials in sufficiently dense hardwood species. Flooring made from wood in cross section gives a much harder wearing surface and is attractive in appearance. The slabs or low grade lumber are sawn into narrow strips of clear wood, kiln dried and planed to produce strips 1" thick and 2⅛" wide. They are then glued into laminations 12" wide and planed on both sides.

Chipped wood conference is now slated for September 15, Marlboro, Vt. Subjects to be discussed will include uses for chipped wood, such as compost, bedding for cattle, wallboard, roofing and fuel.

Reports from recent summer furniture markets show that in many cases manufacturers' orders were running 10% and better than a year ago. Statistics from the Department of Labor show also a very notable increase in employment in wood household furniture.

The rush to cram as many citizens as possible around television receivers is working a minor revolution in furniture design. It seems that almost any item labeled for television — from hassocks to love seats mounted on casters — is purchased quickly and eagerly.

This issue begins a glossary for the veneer and plywood industry. It will take some months to cover all of the material and, as we seldom have extra copies of WOOD WORKING DIGEST on hand, we suggest you save this issue as the first section of your glossary.

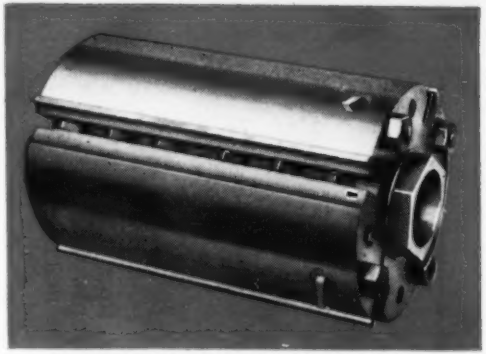
A plywood Venetian "blind" is now being marketed. It consists of vertical exterior plywood panels 4' x 8'. They are pivoted at top and bottom to swing to any desired position. This can form an outer wall of porch or room. When closed it becomes a solid plywood wall.

(Continued on page 40.)

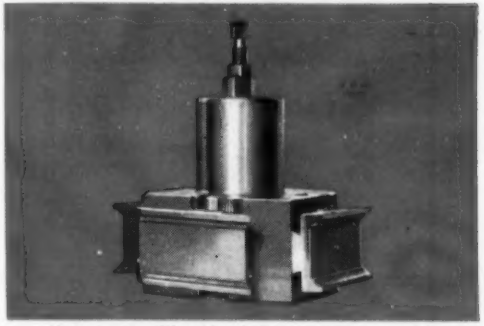
produce BETTER furniture . . . for LESS

WITH

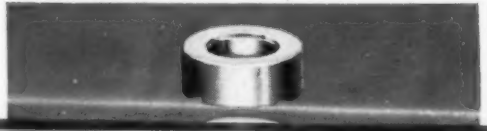
CUTTERHEADS
KNIVES
SHAPER STEEL



Round Cutterhead fitted with grooving cutters for cutting drawer sides. Remove grooving cutters for use as a surfacing head.



K-Type Moulder Head for accurate moulding production with milled-to-pattern bits. Safe. Economical.



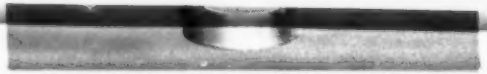
Furniture manufacturers find that Yates-American cutting equipment improves product quality through more accurate pattern reproduction — cuts costs by operating longer with less down time and increased safety.

cutting equipment gets its extra quality from cor-

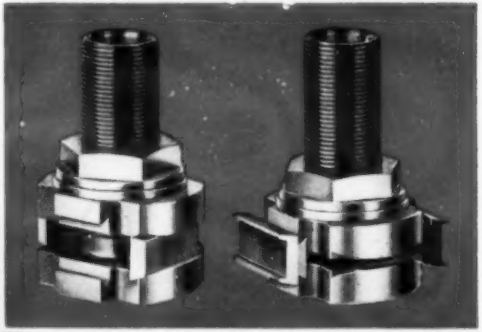
cutting equipment gets its extra quality from cor-

years' experience in successfully filling woodworking re-

years' experience in successfully filling woodworking requirements. It is precision manufactured with accurate machining and carefully controlled heat treatment in a modern well-equipped plant. Let Yates-American heads, knives and shaper steel help *you* produce better furniture for less — write for information on equipment you need.

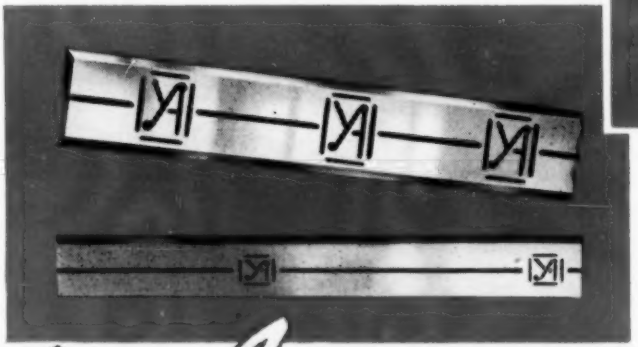


Shaper Knife Collars made of special steel. Accurately machined and carefully balanced for true running.



Combination Shaper Heads provide versatility and safety in the use of milled-to-pattern bits or shaper knives.

PRECISION ENGINEERED FOR ACCURACY, SERVICE



Shaper Steel. Precision-ground and heat-treated to assure you a tough, long-lasting edge.

The Thin Knife is long-lived, holds a keen edge, and produces a smooth finish.

Yates-American

MACHINE COMPANY—Beloit, Wisconsin

Branch Offices
High Point, North Carolina
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Portland, Oregon

MATCHERS • BAND RESAWS • SANDERS • SURFACERS • CIRCULAR RIPSAWS

(Continued from page 37.)

One of the articles in this issue will probably result in some differences of opinion. We look forward to hearing from our readers and will publish comments as space permits.

Seeds from Alabama pines, 250 pounds of longleaf pine, are being used to aid in the reforestation program in France. A disastrous forest fire swept the area last fall. In 1949 Canada suffered the greatest forest fire loss in more than a quarter of a century. Facts such as these should make all of us keen supporters of the "Keep Green" program.

Employment in household furniture is showing remarkable strength in 1950 according to the Department of Labor. Employment has rebounded sharply from last year's mid-season lull. In fact, if the current war situation does not prevail too long, furniture manufacturing may do a record business in 1950.

Fear that military requirements may cut in on civilian production is keeping furniture buying at capacity levels.

According to recent reports, May veneer production set an all-time record. Both mahogany and walnut veneer production are increasing slightly. However, avodire is not over-abundant and general opinion is that production will just about keep up with current demand.

With all the talk about television, designing furniture and even rooms for televiewing, radio is still holding its own. Radio sales in the next five years are predicted to be higher than prewar figures.

Have you ever investigated the potential product possibilities to be found in such magazines as "Better Homes and Gardens"? One of the most successful manufacturers of incidental furniture that we are acquainted with has found it a most profitable source of practical ideas.

Anent the above paragraph a manufacturer in Ft. Smith, Arkansas, is doing a good business manufacturing plywood wheelbarrows for garden and round-the-house use. The wheel is made of half round wood blocks held together with outer layers of plywood nailed on.

C. Audrey Richards, senior pathologist at Forest Products Laboratory, has kindly sent us some literature on oak wilt, a deadly disease now threatening our oaks. To date no way has been evolved to combat this disease and the unfortunate part of it is that oak regenerates by stump sprouts—and oak wilt fungus kills both stumps and roots so there are no new sprouts. Looks like we are losing another war.

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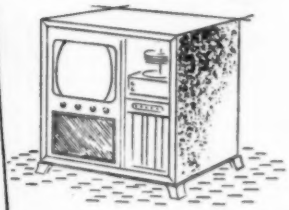
DIGEST

Here's the way to assemble those cabinets right

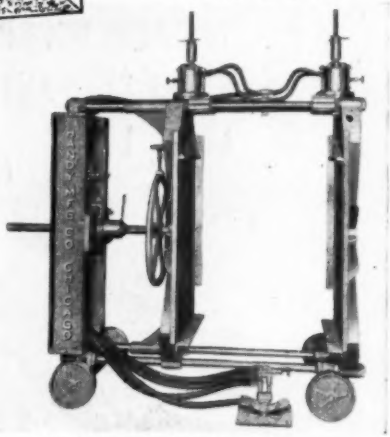
NEW handy DUAL-TRU CASE CLAMPS HAVE THAT MAGIC TOUCH EVEN WITH

MITRE JOINTS

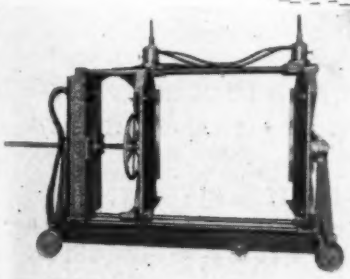


Take a good look at that portrait of Handy's new Dual-Tru. Picture your toughest cabinet job going into this clamp and coming out square and true—just right—in minimum assembly time. No matter what the cabinet design, this superb new equipment has just about everything. At the right is the No. 405 Series with exclusive Handy No. 396 hollow-bore top pressure units, equipped all around with special Handy stroke control. Here is the sure answer to clamping mitred cabinets, because in a few moments the clamp is set-up to squeeze both sides and top at just the right speed, just the right pressure and to the correct dimensions to assure perfect joints.

Because you get perfectly controlled and correctly applied pressure for large cases or small ones, the Handy Dual-Tru assures you a new high level of production at lower cost in your cabinet room. At last, there's a better, surer way; modernize now.



Built for modern production. Patents Pending.



Here is the No. 400 Series Revolving Case Clamp with standard No. 397 hollow-bore top pressure units and counterweights. Any Handy Case Clamp may be equipped with one or more of these top pressure units, which are mounted up out of the way but reach down to apply top pressure even on a small cabinet. Revolving feature permits operators to work with ease on any part of the case.

You GET DEPENDABILITY

The new Handy Case Clamp combines the best of advanced design with proved quality and ruggedness. Notice the main cylinder is hollow-bore, does not ride on the clamp-plate, permits hand operation should air fail. Look at those heavy, accurately machined castings. These clamps are Handy clamps, famous for decades as the best buy by far.

HANDY Manufacturing Company

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MACHINE BITS and DRILLS

EASY BORING
CLEAN CUTTING
TEMPERED FOR
SHARP CUTS AND
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Sharp, clean cutting edges — material and temper for long life — accurate fitting — rapid chip clearing — these qualities have made Forest City Tools an accepted standard in Woodworking for over fifty years. Use this experience on your next order. Specify Forest City.

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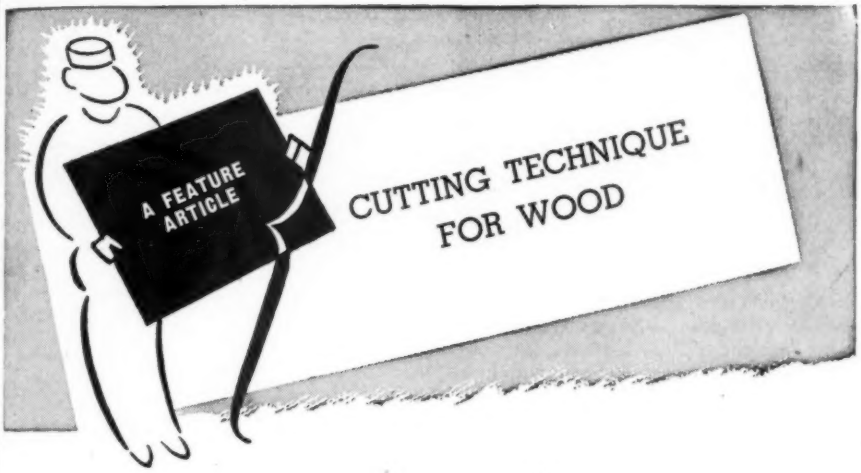
MACHINE DRILLS • COUNTERSINKS • AUGER BITS • ROUTING TOOLS



Part V. Boring, Routing, Carving and Mortising Bits

By Thomas D. Perry

A BIT, in its earliest form, was a relatively long shanked rotating tool, cutting chiefly on its end, and boring round holes. Examples are the gimlet and the early auger bit with "T" handle. As time went on, a square outer shell was added to cut rectangular mortises. A more recent development is the router bit, which cuts chiefly on its sides or flutes. Mention should be made of the dove-tail bit, which is also a side cutter. A carving bit cuts both on the end and sides.

The cutting portions of all types of bits must be multi-purpose, i.e., they must be adapted to cut (1) end wood, severing the fibres, like a cross cut saw; (2) side wood, separating the fibres, as does a rip saw; and (3) be adapted to cut at various angling directions to the grain, as is done by a circular saw with combination teeth. Obviously no one type of bit can cut in all directions with equal efficiency, and careful selection is important to meet, in the best manner, the average service problems of any bit using job.

Boring Round Holes

Any boring tool is advanced into the wood in a direction parallel to the axis of its rotation, and cuts on its forward end only. In order to remove the accumulating chips, the stem of the auger bit or twist drill must be provided with grooves or flutes to facilitate the release of such chips. The diameter of the stem, or body, toward the chuck, must be slightly less than at the lead end, to prevent friction as the tool advances into the wood. This clearance must be adequate for cuts made in any direction with regard to the grain of the wood.

The essential features to consider in a boring bit, of either the spiral auger or twist drill type are:

Spur: to cleanly and smoothly cut the periphery of the hole before the

center wood is removed. Twist drills, ordinarily, do not have such spurs.

Lips: to lift and separate the successive layers of the central wood (the fibres of which have been severed by the spurs) when boring into side wood; and to sever the fibres in that area when boring into end wood. Auger bits accomplish this with a chisel like action, while twist drills develop a shearing process.

Point: to center the drill on the mark and prevent its initial wobbling. The taper or lead point is often provided with single or double threads to draw the auger bit into the wood, as essential feature in hand boring operations.

Clearance groove: to remove the chip waste, is usually in the form of a spiral, single or multiple thread. For shallow holes, as in plywood, such grooves may not be necessary.

Several typical boring bits are shown in Fig. 1, which are no more than representative of a variety of types that are in use.

While, theoretically at least, a bit should definitely cut its way through the wood as it progresses, the important function of clean cutting is limited to the area along the rounded sides of the hole. The design of the spur should be such as not to lift the surface layers adjacent to, but outside of the hole. The crushing or tearing of the wood directly ahead of the tool, and away from the sides, is not serious, and often may be an advantage in breaking up the waste chips for easy removal through the clearance grooves. In bevel point twist drills this center removal function is a combination of shearing and crushing action. Unless twist drills are provided with spurs, the sides of the hole may be rather rough, especially in soft woods, where such roughness may add retentive qualities in dowel joints.

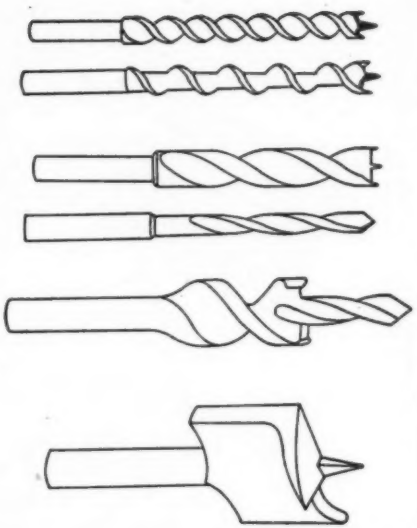


Fig. 1. Types of auger bits and twist drills. Designations from top downward: double twist auger bit, single twist auger bit (both with threaded point), twist drill with spurs and point, normal twist drill (borrowed from the metal cutting industry), counterboring combination of auger bit and twist drill, special bit for large shallow holes in end wood.

All of the bits shown in Fig. 1 have round shanks for mounting in chucks. Tapered square shanks are alternately provided for mounting in bit braces.

The counterboring type, shown as the fifth from the top in the illustration, is available in a number of combinations; as shown, for plugging screw holes in flooring; with a countersink for flush screw holes; with an adjustable smaller drill for holes of different depths; etc.

Where auger bits or twist drills are mounted in multiple spindle boring machines and set to a pattern, the use of lead points, threaded or plain, may not be essential, and they are often omitted.

Plug cutters, with serrated or saw teeth spurs, in the form of short cylinders, will be illustrated and described in a subsequent article. They are widely used to upgrade structural plywood by removing knots and defects, which are replaced with sound plugs.

Boring Rectangular Holes

Square and rectangular holes are made by boring bits of the auger type, revolving inside a non-rotating square shell, as shown in Fig. 2. They are often

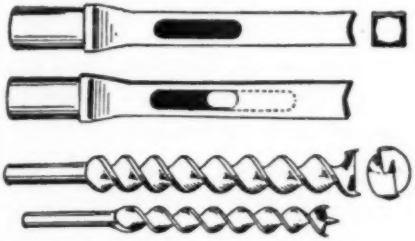


Fig. 2. Hollow chisel bits for rectangular holes. Upper pair: chisel shells with single and double clearance slots. Lower pair: central auger bits, both with spurs, one without point.

called hollow chisel bits, since the lead end of the square shell broaches out the corners with a chisel-like action. The cutting edge on this lead end is slightly curved, as shown, to remove the corner sections first. In setting up a hollow chisel bit, the outer square shell and bit should be adjusted so that the auger is somewhat ahead of the square chisel.

Slotted openings are provided for chip removal, as illustrated, on one or both sides of the square outer chisel, which slots must be well above the surface of the wood at the deepest cut. The single slot is customary on small bits, although many users prefer the double slot on both small and large sizes.

Rectangular holes are made by a succession of square holes, as the wood is moved along the table. The chisel bit must be wholly withdrawn between each pair of holes.

Chain mortisers are also available, with saw cutting teeth on the periphery of an endless chain, and will be illustrated and described in a subsequent article, since they are in no sense boring tools.

Router Bits

The router bit is a relatively recent adaptation of the boring bit, in which the cutting action is principally that of the sharpened edges of the clearance flutes, which are cut straight, rather than as spiral grooves. This type of cutting action is not unlike that of a very small solid cutting head on a shaper. In fact, molded edges, both outer and inner, can be made with shouldered types of router bits (lower sketch in Fig. 3.) Frequently this is more advantageous than the shaper process, since the router bit usually cuts from above, while the cut of the shaper is normally either a side cut, or sometimes an undercut. The router is the safer machine and the work is always in full view of the operator, which is seldom true in shaper work.

Router bits operate at high speeds, up to 25,000 R.P.M., and hence produce smoother surfaces than either saws

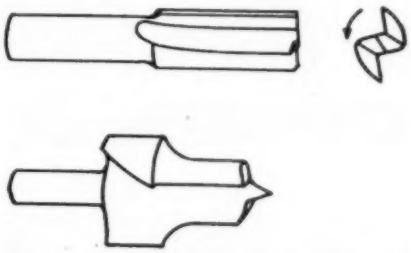


Fig. 3. Router bits. Upper: for slots with vertical edge. Lower: for slots with rounded edge.

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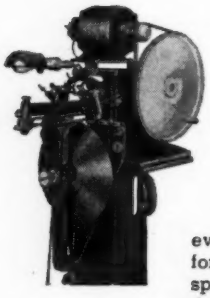

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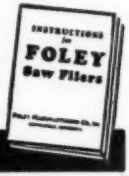

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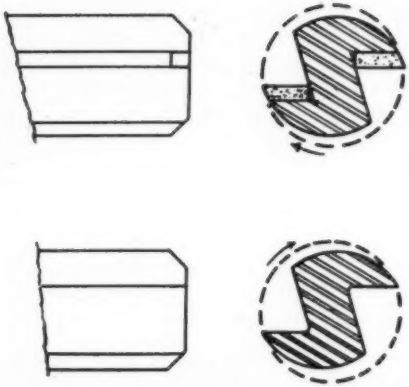
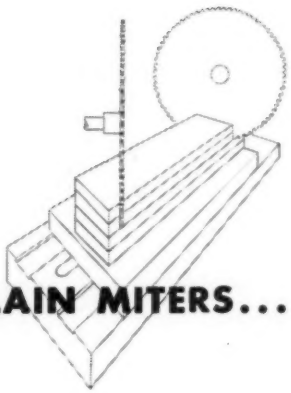


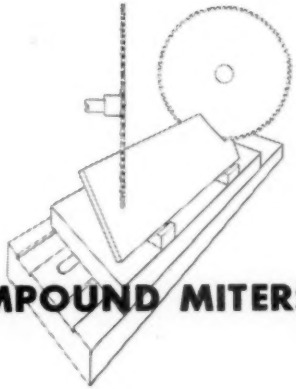
Fig. 4. Router bits with tungsten carbide cutting edges. Upper: two groove router bit with brazed-on cutting edges. Lower standard router bit of tool steel.

or standard rotary cutter heads. Consequently they have superseded both of these types of tools in many operations. Examples are: cut-outs and inner edges, where reciprocating jig saws are slower and leave rough edges; curved and molded outer edges, where a single operation on router may be equivalent to both separate cuts, (1) roughing out on a band saw and (2) finishing on a shaper; mortise slots, which however have rounded ends, but smoother sides than can be obtained in other types of mortisers; and other similar operations.

The routing cut is also useful for decorative grooving, inlays, recesses and the like, where the cuts are shallow and do not extend through the wood.

Router cuts are particularly useful in plywood, such as fret work and grills, several of which can be cut in one router operation, producing edges that require a minimum of sanding. The life of the cutting edges of the router bits can be substantially prolonged, when cutting resin bonded plywood, by the use of tungsten carbide cutter faces, as shown in Fig. 4. These





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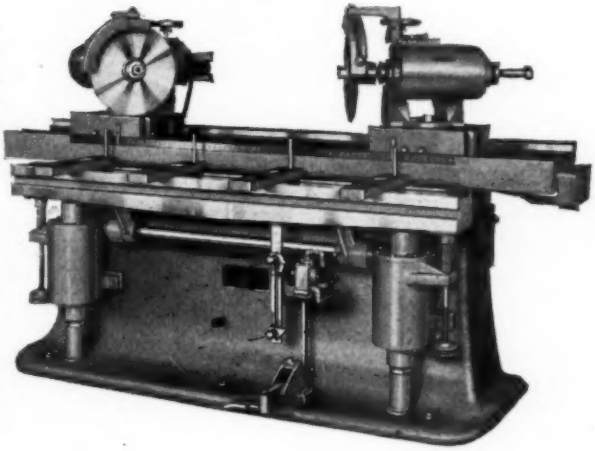

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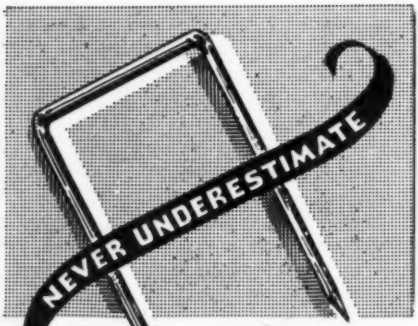

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brazed cutting edges of tungsten carbide can be used on bits of ½" diameter and up. While these tungsten carbide router bits are more costly than the tool steel types, their cost per 1,000 lineal feet of cut is much lower than that of the standard bits. Small bits, less than ½", which are needed to make moderately sharp fillets in the cut-outs, usually have only one flute, while the larger bits may have more than two. Solid tungsten carbide router bits have not proved practical, since the torsional strains are excessive for this material, and reinforcing backings of tougher tool steel are required.

Dove-tail Cutting Bits

Typical dove-tail cutting bits, for lock corner constructions, are shown in Fig. 5, equipped with a rim of saw teeth to cut the flat end of the dove-tail recess, whether in side wood or end wood. These cutters are set up in gangs so that the solid wood remaining between the cuts is of the same size and shape as the cut-out, but reversed. The front and side of the drawer, as an example, are clamped in the dove-tail machine, and both parts are cut by the same series of cutters, thus eliminating any final fitting of the projections. These

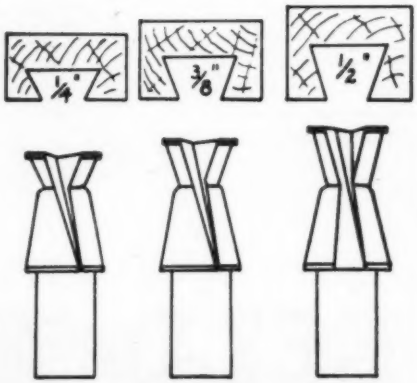

Fig. 5. Dove-tail cutters.

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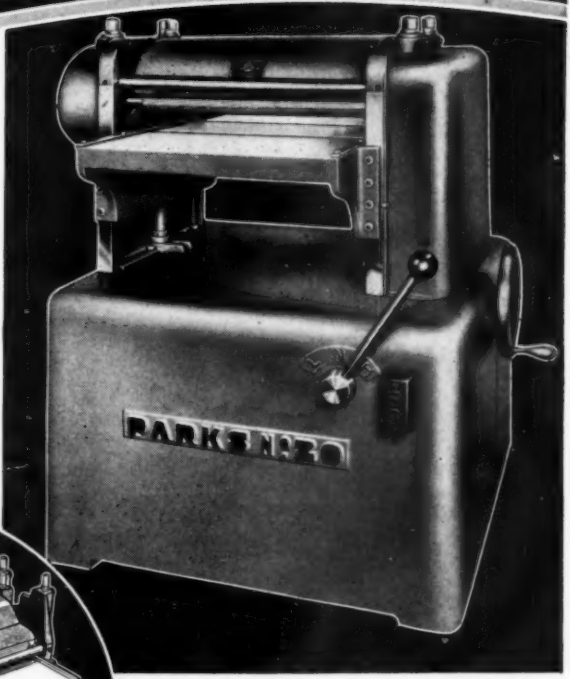

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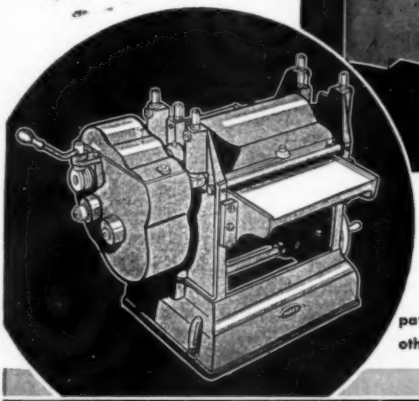

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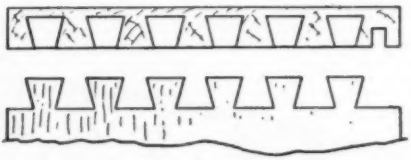

Fig 6. Completed dove-tail cuts. Upper: drawer front with female recesses. Lower: drawer side with wedge-like projections.

two parts are properly positioned and successively machined, by a tilting mechanism, as they are passed over the gang of dove-tail bits.

The completed cut on these two parts is illustrated in Fig. 6, with the wedge like projections shown directly below the recesses. The extra square slot is the groove for the drawer bottom.

This type of dove-tail cutting provides a strong rigid lock corner joint that does not detract from the smooth appearance of the drawer front.

Carving Bits

Bits for spindle carving are available in a multitude of shapes and sizes, of which a few typical examples are shown in Fig. 7. Carving bits are a combination of routing and boring bits, since they are designed for both side and end cutting. Carvings for furniture, produced on a quantity basis, are made on multiple spindle carving machines that produce ten or twenty of a like type at one loading. These machines provide space for a central model or dummy, which has been carved to the exact design required, over which the operator moves a somewhat blunt leading pointer. The units to be carved, of rough approximate shape and size, are clamped under each cutter head, just as the model is located under the leading pointer. This pointer, through pantagraphic joints and connections, moves the gang of motor driven cutter heads through exactly the same cycle, and carves each unit to match the

model. In this way all units are carved simultaneously with mechanical accuracy, except for any final undercutting, a subsequent operation, which is done individually on each unit, either with hand tools, or with a single spindle motor driven carving cutter. These single spindle cutters may also be used for the complete carving operation, where quantities are small, or when costs permit.

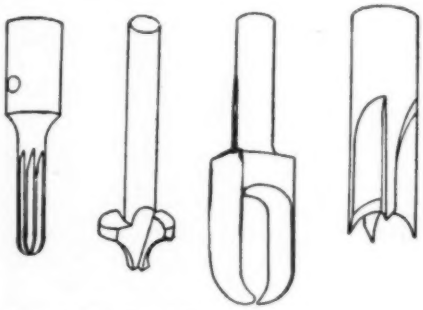

Fig. 7. Carving bits.

With skilled workmen, these mechanical carvings are almost equal to the artisanship of hand carvings, although they may lack a bit in individuality. Mechanical carving has greatly reduced carving costs and has made these examples of beautiful craftsmanship available to thousands of moderate incomes, who enjoy such artistry in their homes, and who otherwise could not afford to own such furniture.

Conclusions

Boring bits have come a long way from the clumsy gimlets and auger bits of ancestral carpenters and woodworkers of past generations. One can but wonder what new mechanical developments will appear in this boring bit field in the next half century!

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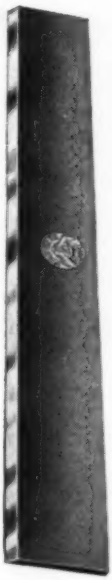

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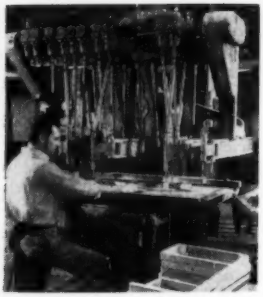

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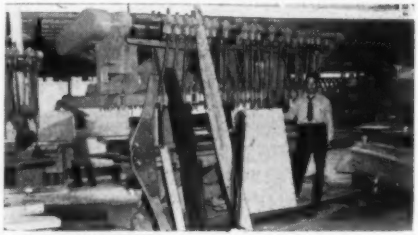

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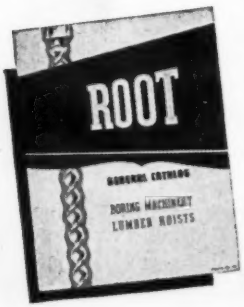

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will carbide knives make jointing unnecessary?

by M. A. Corti

Mr. Corti, the author of this article, in submitting it predicts that there will be some differences of opinion on his conclusions. We have no doubt that there will be many who may disagree with many of his conclusions. However, we believe this kind of controversy may be stimulating and invite your comments.—Editor

EVERY WOODWORKING man will agree that it would be a great time saver if frequent jointing could be eliminated. A machine is out of production while being jointed. It is an expensive operation in time, labor and production losses. It is a difficult operation on profile cuts.

The reasons for jointing fall into three categories:

In the first, jointing is resorted to, in order to correct or compensate for conditions in the machine itself. Second, inaccuracies in the cutter head assembly itself. Third, to compensate for uneven wear by various knives.

Machine Conditions

After long periods of continuous use, a machine wears and develops defects. Frequently, these defects are not easily detected and repaired.

One of the reasons for jointing's popularity and consideration as a necessity is because jointing compensates for so many different conditions in the machine.

Jointing is thus both a blessing and an evil—a blessing because it is possible to keep a machine running with reasonable efficiency without making necessary repairs; and an evil because it postpones repairs that really should be made before the conditions get worse. It's easier to joint than to overhaul the machine. It's an expedient method of postponing repairs.

Specifically, here are some of the machine conditions to which we are referring:

(A) A defective or worn out bearing will throw its spindle and cutter head out of concentricity. Frequently, but not always, jointing will compensate for this condition. An exception is that,

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Mr. Corti is president of Marcoloy, Inc., Springdale, Conn., manufacturer of carbide tools. The material for this article has been assembled by the author after five years of almost continuous work in the woodworking industry with carbide tools.

sometimes under a heavy cut, jointing will not correct the condition.

(B) Spindles, bent or out of concentricity, will revolve the cutter head eccentrically. Here again, jointing will compensate for this, providing the cutter head remains in the position at which it was jointed. Once a bent spindle has been operated over a period of time, it cannot be successfully straightened, because the steel has developed fatigue and expansion of its structure at a certain point and the spindle will bend again, after being straightened, in the same way and at the same point. The only practical solution for a bent spindle is to replace it with a new one.

(C) Rotors and spindles out of balance are common defects. While machine builders balance the rotors and spindles accurately, it is not uncommon to find that the rotors and the spindles get out of balance through use. Jointing may help to conceal this defect.

(D) Machine vibration is undesirable as everyone knows. However, jointing may alleviate the results of this condition.

Better maintenance of machines will reduce the need for jointing. Much jointing can be avoided by eliminating causes.

We know of many examples where cutter head assemblies have been installed and the machine operated without any jointing whatsoever, and where the proper number of knife marks per inch were produced. This would indicate that the machine was in good condition, and the cutter head equipment was accurate.

Conversely, we have found that cutter heads that required no jointing on one machine, had to be jointed on another, where all operating conditions were the same. Again, this indicates that the machine conditions, rather than the cutter head, may be the primary cause for jointing.

The Cutter Head Assembly

First, the cutter head must be designed to achieve maximum strength and stability at high speed.

Second, it should be accurately balanced by the manufacturer without the knives.

Third, the knives should be balanced separately.

Fourth, and even more important, the steel used in making the cutter heads must have high tensile strength and be normalized by treatment to relieve the stresses promoted during the manufacture of the cutter head, so that equal expansion of the steel takes place when the cutter head is rotated at the maximum operating speed.

The Method of Mounting Cutter Head on Spindle

It is desirable, whenever possible, that the cutter head should be so designed that the self-centering device be an integral part of the cutter head itself and on both ends of the cutter head, in order to avoid play or misalignment of the cutter head to the spindle. A separate inverted collet type of self-centering device is not as positive since the clamping is generally on one end of the cutter head only, and it can work itself out of concentricity to the spindle.

Cutting Edges not Conforming to the Cutting Circle

All knives should be mounted in their respective slots so that the cutting edges are aligned to within .001" of the true cutting circle. One of the great advantages of carbide knives is, I believe, that once accurately ground

and set up they "stay put" and do not require frequent or subsequent adjustments since sharpening is infrequent. Hence, the knives are not disturbed.

In order to accomplish this, the knives must be so designed, mounted and locked into position so that no movement occurs because of centrifugal action, or otherwise.

Accurate Grinding

All knives must be equally and accurately ground, so that each cutting edge does its share of the work along the full profile.

Where the run is long enough to justify the cost, ground-to-pattern carbide or steel knives should be used. The most frequent cause of jointing is inaccurately sharpened form knives. The inaccuracy, in most cases, results from the difficulty in sharpening conventional slip detail knives on the clearance side without altering the form. Milled-to-pattern carbide knives are sharpened on the face only, thereby maintaining the form for the life of the knife.

Uneven Wear of Knives

This is the third category of the reasons for jointing.

Steel knives wear unevenly. Heat generated by friction is the cause of this. The knives that wear fastest stop working. Jointing is necessary to bring them back into action.

Carbide knives, because of their greater hardness, hold their edges far longer than steel knives. The cutting edge of a carbide knife will not be affected by heat generated by friction because carbide is a good heat conductor. It dissipates heat much faster than steel.

Furthermore, properly designed carbide knives can be jointed as easily as steel knives when necessary, and jointing will accomplish the same results as with steel knives. Because of the long life of the carbide cutting edge, jointing is only infrequently necessary, and jointing time is greatly reduced.

A jointed carbide knife is superior to a jointed steel knife, because the carbide knife will dissipate the heat generated by the heel where a steel knife will not.

A jointed carbide knife will have a much stronger cutting edge, since the included angle of the cutting edge is increased by jointing.

Now that we have examined the reasons for jointing, let us look at the practical aspects of the elimination or reduction of jointing on moulders, for example: 1. Consider the time that is required for setups and jointing. 2. Accurate cutter head assemblies could make it possible for a machine to operate at its capacity. If the machine is built to operate at 150 f.p.m., why run the machine at 50 f.p.m.? 3. Consider the time required to shape the jointing stone. 4. Imperfect work is caused by an excessive heel on a knife caused by jointing. 5. Jointing covers up when a machine is not properly maintained, when it has defective bearings and spindles. 6. Jointing compensates for cutter heads and knives not properly designed and manufactured for the machine and work to be done. Frequently the knives are not balanced when installed in the head. An oversize bore in the self-centering device cannot be taken up along the spindle uniformly, so as to hold the head parallel to the spindle.

Jointing is the all-important, ever-present, almost overpowering problem on moulder operations, particularly on form or profile cuts. Parenthetically, I would like to say that the purpose of this article is not to disparage the advantages of jointing, since jointing has been a salvation to the industry.

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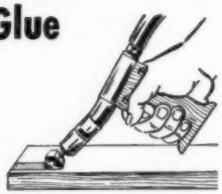

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However, the elimination of jointing would be another great step forward in our industry, should the cause for jointing be eliminated.

After analyzing the needs and causes of jointing, three points seem clear: 1. That jointing is necessary and desirable because it is a seemingly easy way to correct a defect somewhere along the line, and 2. That jointing frequently conceals machine and equipment conditions that should and could be corrected. 3. That while jointing has undoubtedly brought great benefits to the woodworking industry, everyone is agreed that its elimination would be as desirable as its invention was in the first place.

Carbide knives and cutter heads, properly designed and manufactured, seem to offer great promise in the elimination of the need for jointing—at least, as far as the cutter head assembly itself is concerned.

Obviously, carbide knives will not compensate for the machine errors enumerated above, any more than ground-to-pattern steel knives would.

One of the commonest errors in woodworking plants is that frequently too much attention is focused on the cutter heads and knives when the work is not coming out right. The cutter head assembly may be perfect and yet the work may not be right because something else is wrong in the machine. As you can see from the above, the cutter head is frequently the medicine that is used to correct the ills of a machine. This is accomplished by jointing. In many cases, it would be far easier and less expensive to correct the trouble at the true source.

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The McKnight No. 1-E Saddle Seat Machine cuts six, eight or ten seats per minute. It is the highest speed and most efficient saddle seat machine manufactured. Stock is carried from the hopper to the cutting head by a steel chain. Motor, 10 HP, 3600 R.P.M., ball bearing type. Cutting Head runs at 5000 R.P.M., is mounted in ball bearings. *Write for further details.*

Manufacturers of Combination Horizontal and Vertical Boring Machines — Trimming, Chucking & Boring Machines — Single Drum Sanding Machines — Corner Block Machines — Chair Clamps — Notching Machines — Single End Tenoners — Bending Equipment (including Steam Boxes, Pumps, Benders) — Mortisers.

McKnight Machinery Company

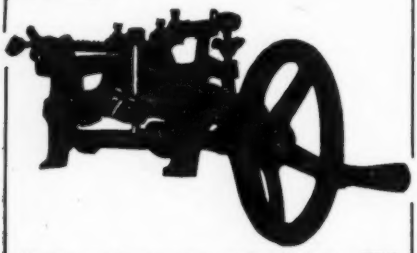
Chair and Woodworking Machinery

GARDNER, MASSACHUSETTS, U. S. A.

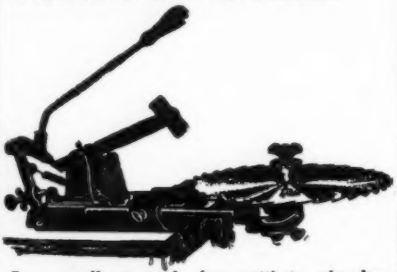
THE SIMPLEX

Circular & Band Setting Machines. The most simple and practical machines made.

Will fit your saws better and more accurately and in a fraction of the time required by the obsolete method of hand setting.



Simple yet accurate and efficient. Will do more and better work than any other machine of its kind.
The vise takes saw blades ⅛"-1½" in width and by automatically gripping the saw while tooth is being set, prevents twisting of narrow saw blades.
The feed finger is adjustable to teeth with ⅛"-⅝" spacing, point to point.
A saw can be set in 4 to 5 minutes.



An excellent tool for setting circular saws. The successful operation of all circular saws depends largely upon the manner in which they are fitted.
To obtain the best results the teeth should be properly and evenly set.
Adjustable for saws, either rip or cut-off, from 5" to 24" in diameter.

Write for complete information

ZEILLER & NAGEL INC.
234 Java St. Brooklyn 22, N. Y.

the argument before the advent of carbide knives, that it is impossible to operate cutter head assemblies without jointing. In this connection, I would like to ask why it is that glue jointer heads are rarely jointed, and in many instances cannot be jointed as there is no provision on the machine for jointing. It is true that the cuts are not as severe, but on the other hand, the work must be perfect.

For example, if a glue jointer with a six-knife head turns at 3450 r.p.m with work being fed at a rate of 107 f.p.m. will produce 16 knife marks per inch without jointing, why can't a moulder produce similarly good work without jointing?

True, the cut on the glue jointer is not as severe as in many instances on the moulder, but since the mechanical means used on a glue jointer to hold the work in place is not as positive as it is on a moulder, it would appear that the operation on a glue jointer is really just as severe as on a moulder. (The lumber is not supported opposite the cut.)

On the other hand, stock fed into a moulder is held securely by the bed plate, chip breakers, fence, pressure shoes and pressure bar which is opposite each cutter head.

The desirability of jointing has seldom been questioned because it has been a common and easy way to accomplish the desired result. But, every woodworking man knows that it is a costly operation.

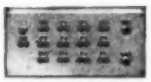
It would seem that this whole field of jointing offers great possibilities to research men in our industry. As we learn more about the causes that make jointing necessary, machine builders and cutter head and knife manufacturers can use the information to produce better equipment.

"JOB STEALER"...that's what they're calling the versatile Greenlee Double-End Tenoner

Yes, many plants today using the GREENLEE Double-End Tenoner on many, many more operations than originally planned for when this equipment was purchased. For, as "a woodworking plant in itself," it literally reaches out after extra work . . . steals job after job from single-purpose machines, often making them unnecessary. With its easily-applied attachments the GREENLEE performs *15 separate operations* swiftly, accurately . . . even processes serpentine and other irregular shapes. Thus, one machine alone does scores of different and difficult woodworking jobs . . . brings about untold new efficiencies and welcome cost reductions. Write for Bulletin 545, Greenlee Bros. & Co., 1868 Twentieth Avenue, Rockford, Illinois.

QUICK, EASY SET-UP TO A FRACTION OF 1/64" ... no time wasted . . . Adjustment Dials indicate exact distance between cutters.

CUTTER HEADS QUICKLY ACCESSIBLE . . . pressure beams swing out to give quick, safe access.



INSTANT CONTROL AT YOUR FINGER-TIPS . . . push-button panel starts and stops any or all motors at once!

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GREENLEE

GREENLEE WOODWORKING MACHINERY: MORTISERS • BORERS • SAWS • TENONERS • PLANERS • SHAPERS • Mortising and Boring Tools

Inaccuracies in Cutter Head Assembly

As stated above, one of the reasons for jointing is because of inaccuracies in the cutter head, the knives, and the complete assembly.

Therefore, another step in eliminating jointing, or greatly decreasing it, lies with the cutter head and knife manufacturer. The cutter head assembly can be made with such precision that every cutting edge of every knife will be exactly on the cutting circle when the head is turned at its normal operating speed.

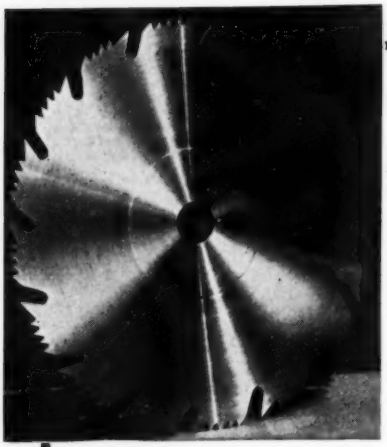
(But this is only part of the picture, as stated previously. As steel knives wear unevenly, certain cutting edges begin to leave the cutting circle. At this point, it is necessary to bring the cutting edges back to the cutting circle by jointing or sharpening.)

To summarize, I do not believe that carbide knives can completely eliminate all jointing by themselves. They can greatly reduce the amount of jointing necessary by themselves, but they cannot eliminate it altogether where jointing is necessary to correct or compensate for a machine defect.

As pointed out previously, carbide knives can be jointed to compensate for some machine defects. Once jointed, they stay that way, and frequent jointings between sharpenings are avoided.

Furthermore, if it is necessary to remove the cutter head assembly from the spindle, its position on the spindle can be indicated. The cutter head can be reinstalled on the spindle in the same position, which eliminates the necessity for further jointing.

Better maintenance of machines, coupled with carbide knives and precision made cutter heads, should absolutely and completely eliminate the need for jointing, in my opinion.



The saw pictured is perfectly ground in accordance with CHICAGO high standards. It will cut in any direction, whether ripping with the grain or cutting across the grain. It is hollow ground for smooth cutting without binding.

Here's SAW Value that spells ECONOMY

In making equipment selections to serve your best interests, play safe and include CHICAGO SAWS. You get the finest in quality, the tops in dependability with long life and the ability that produces excellence in results. CHICAGO SAWS have the correct amount of tension, and tempered by scientific heat treating. They are individually balanced and accurately fitted.

CHICAGO SAWS are sold by leading supply houses.

For further details write for Bulletin 107.

CHICAGO SAW WORKS
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CHICAGO 9, ILL.

Improved maintenance of machines in the woodworking industry will add other benefits, in addition to the elimination of jointing, as the machines will handle more work, feeds can be increased and quality improved.

The above facts have been proved to my satisfaction by the fact that a great many cutter head assemblies with carbide knives have been installed on the machines they were designed for, and operations started without any jointing. In other cases, it has been necessary to joint the carbide knives to correct a fault some place along the line.

Yes, carbide knives, better designed tools and improved maintenance should completely eliminate the need for jointing.

The End.

HOME SHOW IN SEPTEMBER

The world's greatest "Home Show" opens across the nation September 10-17.

It's National Home Week, the period in which the American home building industry demonstrates its wares to the public. Marked by civic celebrations, displays, exhibits, parades and speaking programs, it is the time when Mr. and Mrs. America turn out to inspect the products of the greatest home building wave in history.

Originally sponsored by the National Association of Home Builders, the week this year has two additional sponsors, the National Retail Lumber Dealers Association and the National Association of Real Estate Boards. Also officially participating are the American Gas Association and the International Association of Electric Leagues.

Special celebrations are being planned in upwards of 100 cities in all parts of the country, in addition to the national observance.

Excellent speeches are made by men who have nothing to say, but say it well. —Kreolite News

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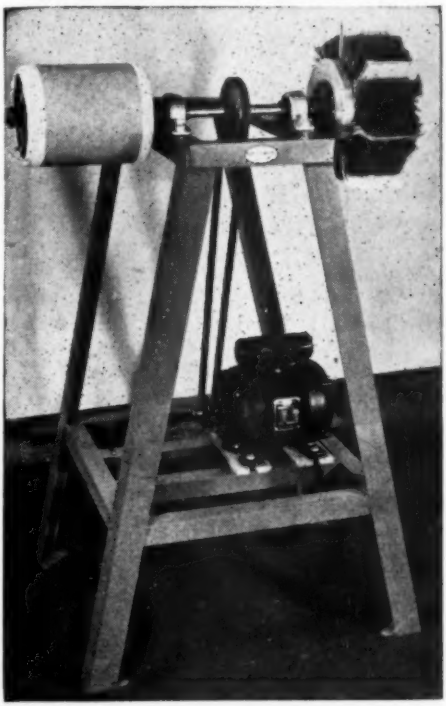

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Get A-1 finishes on all types of wood products with rounded contour and irregular shape, such as—

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The Sand-Rite "Duo" Sanders are available in floor models as illustrated or in handy bench models. The "Duo" will save you labor time and abrasive materials and give you finer finishes.

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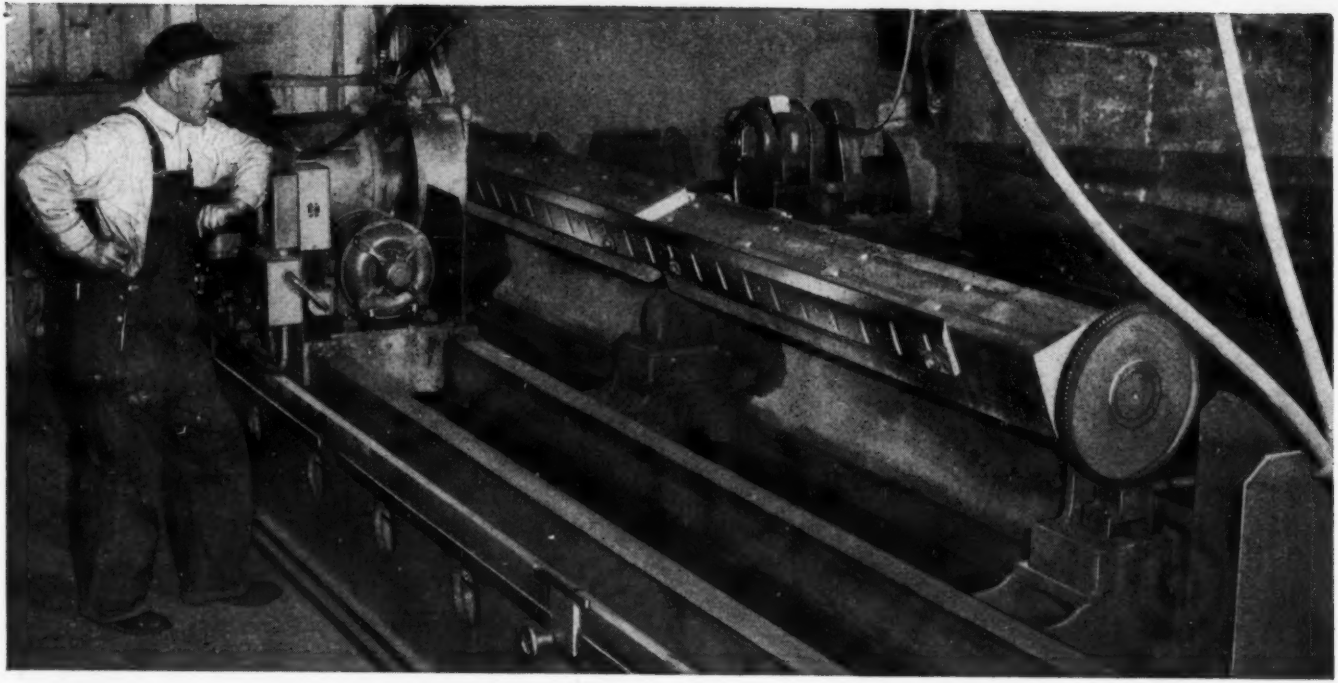

"It's smooth sailing when grinding Disston Knives"

"They are straight, of uniform thickness, and even hardness," says C. J. Ellis, veteran Knife Grinding Supervisor at Nickey Bros., Inc., Memphis, Tenn. Mr. Ellis has charge of all knife grinding in the Nickey Bros. Veneer plant—considered to be one of the most up-to-the-minute and outstanding veneer plants in the world.

DISSTON KNIVES HAVE WHAT IT TAKES!

To satisfy experts like these, knives *must* be good!

hardness," says C. J. Ellis, veteran Knife Grinding Supervisor at Nickey Bros., Inc., Memphis, Tenn. Mr. Ellis

the-minute and outstanding veneer plants in the world.

"We have used Disston Knives for over ten years and have never had one go bad . . ."

E. L. Calhoun, Nickey Bros. Veneer Mill Supt., says, "Disston Veneer Knives can be relied upon to hold closer tolerances in the thicknesses of the veneer, which is important in the making of *good* plywood. They are everything a good veneer knife should be. We use them on all of our rotary lathes, as well as on our slicers."

DISSTON KNIVES HAVE WHAT IT TAKES!

To satisfy experts like these, knives *must* be good! Disston woodworking knives are better because . . .

They're made with Disston Steel—special knife steel, milled, rolled, and finished, hardened and tempered in Disston's own steel mills.

They're made with Disston Skill—the product of 110 years' experience in making fine cutting tools.

They're backed by Disston Service—the complete Disston engineering and inventory service you get through your Disston distributor.

As Jim Norvell, Nickey Bros. Sawmill Superintendent says, "We know that we could never find a better knife than Disston . . . "

THERE'S A DISSTON KNIFE FOR EVERY WOODWORKING PURPOSE

. . . order through your Disston Distributor.

DISSTON PHILBRICK® Generated Type
(milled to pattern) CUTTER HEADS

Precision-made, dynamically balanced, made of Disston Philbrick heat-treated alloy. Each pair of heads accommodates a variety of patterns. Knife changes are quick, simple. Disston Philbrick Cutter Heads give you more footage—with smoother finish —with lower investment and operating costs!

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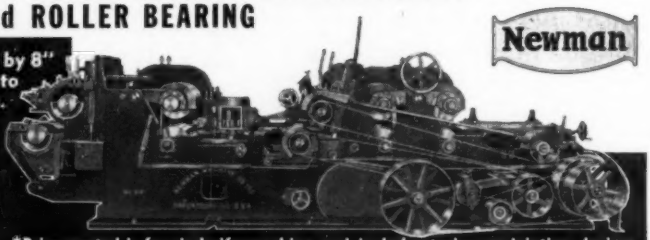
ESTABLISHED 1840 REG. U.S. PAT. OFF.

Planer and Matcher Capacity for *Your* needs

The NEWMAN 512 PLANER and MATCHER
BALL and ROLLER BEARING

Newman

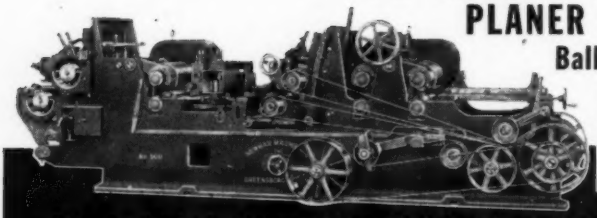
Capacity: 16" wide by 8" thick. Speeds up to 325 lin. ft. per min. Six 12" diameter power driven feed rolls.



$*10,950 F.O.B. GREENSBORO, N. C.

*Price quoted is for six knife machine and includes truing or jointing devices for top, bottom and side heads, also tight pulley or flexible coupling. Eight knife cylinders can be furnished at additional cost, also single or double profiler (as shown).

The NEWMAN 500 PLANER and MATCHER
Ball and Roller Bearing



Capacity: 14" wide by 6" thick. Speeds up to 200 lin. ft. per min. Six 8" dia. power driven feed rolls.

$†7,450 F.O.B. GREENSBORO, N. C.

†Price quoted is for four knife machine and includes truing or jointing devices for top, bottom, and side heads, also tight pulley or flexible coupling. Six knife cylinders can be furnished at additional cost, also single or double profiler (as shown in illustration).

The NEWMAN 510 PLANER and MATCHER
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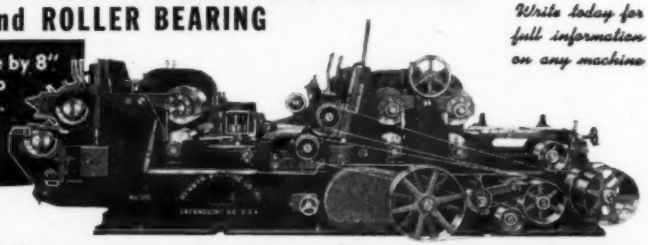
Write today for full information on any machine

Capacity: 16" wide by 8" thick. Speeds up to 250 lin. ft. per min. Six 10" dia. power driven feed rolls.



$††9,975 F.O.B. GREENSBORO, N. C.

†† Price quoted is for six knife machine and includes truing or jointing devices for top, bottom and side heads, also tight pulley or flexible coupling. Eight knife cylinders can be furnished at additional cost, also single or double profiler (as shown).

NEWMAN MACHINE COMPANY INC GREENSBORO N C U S A

PORTLAND *plays host*

IT IS impossible, of course, to relate all that happened during the recent Forest Products Research Society Convention. However, WOOD WORKING DIGEST representatives who attended believe that it is well worthwhile to review some of the convention and industry show.

The convention was especially good—papers were slanted toward every phase of our industry. We are presenting a few abstracts herewith and hope to publish other papers in the near future. Discussion from the floor was lively and thought-provoking. WOOD WORKING DIGEST has held to the position that research is a very necessary factor to progress and we are pleased to note registration at this convention indicates that there are key men in our industry—from coast to coast—who share this belief.

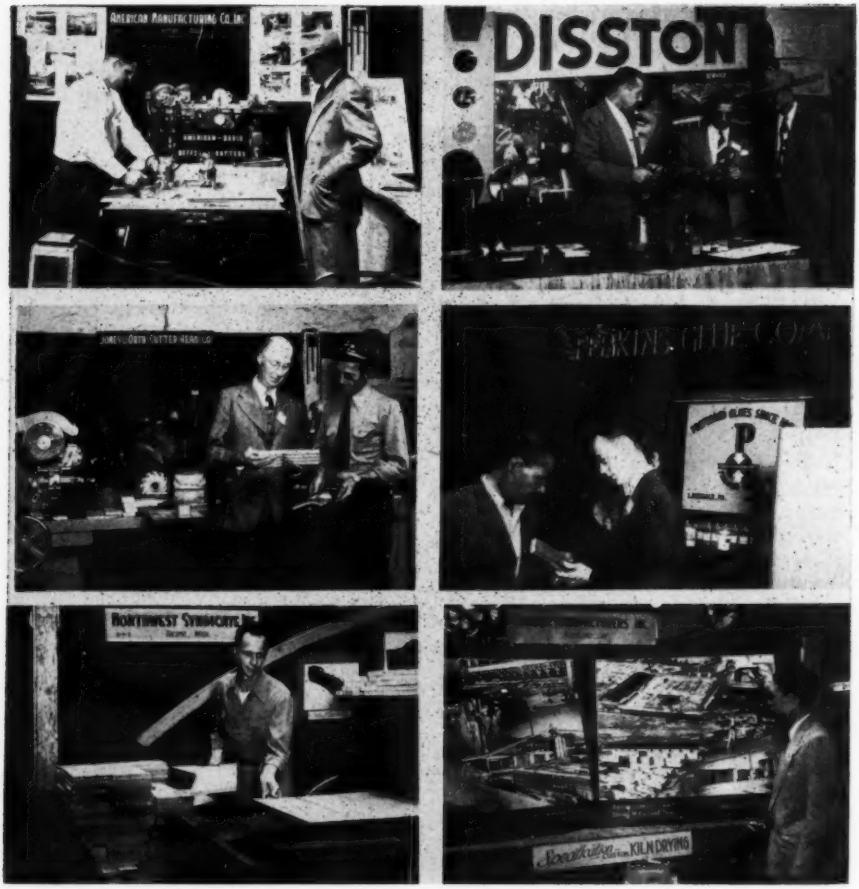
Because there are a number of organizations which cannot undertake research for themselves, it is fortunate that these annual conventions and the work of the Forest Products Laboratory provide opportunity for learning of the most recent developments in the industry.

On the second day of the meeting the new officers were installed: James F. Hamilton, technical service director of the Perkins Glue Company, Lansdale, Pa., president; Roy M. Carter, professor of wood technology at North Carolina State College, first vice president; and Kenneth Chesley, director of research for the Crossett Lumber Co., Crossett, Ark., second vice president.

The industry show was not as well attended as some exhibitors had hoped. But nevertheless, those who visited the exhibits found a number of machines set up and under power. Other firms used photographic blowups to illustrate their machinery, and all exhibitors were well supplied with information about their products.

The entertainment was unsurpassed! At the western barbeque, held on the second day, we all became better acquainted and had a wonderful time at Timberline Lodge. In fact, we felt that there was an especially friendly attitude throughout the entire convention.

Along with this article, we have included a number of views taken inside the Armory. The employment service, under direction of Paul M. Dunn, is something we'd like to see develop. It can be mutually helpful to forestry graduates and to the entire industry.



Preliminary announcements have placed the 1951 show and convention in Philadelphia for the week of May 7. We hope many of our readers will plan to attend and enjoy the benefits we found at this year's meeting.

WOOD WASTE IN THE DOUGLAS FIR REGION

F. W. Guernsey

How to utilize the inevitable waste products that are the result of logging and sawmill operations is a problem not easily solved. Larger organizations can afford to experiment and gain a greater benefit from waste products than smaller businesses.

It seems that industry's main source of hope is in more research, which will result in the development of new uses and products, new methods and machines. Various types of waste are classified and present uses fully described.

Some countries utilize only to a small extent the products of their own

forests. If the standard of living in these countries is to be raised, they must consume greater quantities of forest products, as one of the yardsticks of the standards of living of a nation is the amount of pulp and paper products it uses. As these standards are raised, more and more wood products will be consumed, and since we are guilty of overcutting in our own U. S. forests, waste will become even more valuable—too valuable to leave on the forest floor or destroy as fuel.

RECENT DEVELOPMENTS IN WIREBOUND CONTAINERS FOR FRESH FRUITS AND VEGETABLES

C. H. Jandt

At present the fruit and vegetable

operators are combining in the establishment of a scientific program to undertake study of packing processes. Containers will be checked to determine what changes will result in more efficiency. Because of freight rates it is very necessary that the weight of the container be at an absolute minimum.

The wirebound container, by virtue of its design, has less tare weight than other types of containers. This crate has kept a light tare weight by using thin veneer boards on several surfaces and transferring the stress and strain from the members to steel girth wires encircling the crate.

Second factor in this study is to deliver as much saleable goods as possible. New containers have been developed for several products. Also now in process of manufacture are a number of machines which will close the crates easily and quickly.

DEFECT DETECTION EQUIPMENT

Robert E. Partch

The detection of defects in wood may be a search for both chemical or physical characteristics of the wood. X-ray testing methods are described. With this technique it is possible to inspect piling and public utility poles. X-rays lend themselves to detecting hidden metal objects. Radio-frequency waves have been used for some years to detect moisture. Direction of wood fibers can be checked with infrared equipment.

THE PLACE OF WATER-REPELLENT PRESERVATIVES IN FOREST PRODUCTS

Gardner G. Garlick

A water-repellent preservative is not a cure-all, but there are many applications where from a practical standpoint it overcomes some of the shortcomings of wood.

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A Big Time-Saver For Every Wood-Working Plant

STUDEBAKER HYDRAULIC RAMS

No more individual clamping by hand. Two or more Hydraulic Rams operate simultaneously for fast and accurate clamping and unclamping.

Foot controlled Hydraulic Pump gives slow squeezing action to pressure of several tons. Leaves Hands free.

Rams available singly, in pairs, 3 or 4 or more. Can be mounted on tables, bench or pedestals — horizontally or vertically — to fit the job.

Send details of your operations for engineering assistance.

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DIEHL'S CLAMP-TYPE
CUTTERHEAD

● Before it leaves the factory, every Diehl Cutterhead is statically and dynamically balanced. That's one reason why high speeds and fast feeds are no problem when you use Diehl Cutters and Cutterheads. In addition, you profit from 40 years of specialized Diehl experience. You want simple design – fast, accurate set-up – high production over a long and trouble-free wear-life. Diehl engineers know your needs today, anticipate tomorrow's.

If you have a special problem, just tell us what you want to accomplish: we'll be glad to show you how Diehl would solve it. For complete information on Diehl Cutters and Cutterheads, write for a copy of Catalog No. 88.

OTHER DIEHL PRODUCTS: Rip Saws & Cut-off Saws — Diehl-Vonnegut Moulders — Veneer Splicers and Jointers — Tapeless Splicers — Glue Jointers & Edge Moulders — Edge Gluing Machines — Cutter Grinders — Specially Engineered Conveyor Systems.

Cutter Division

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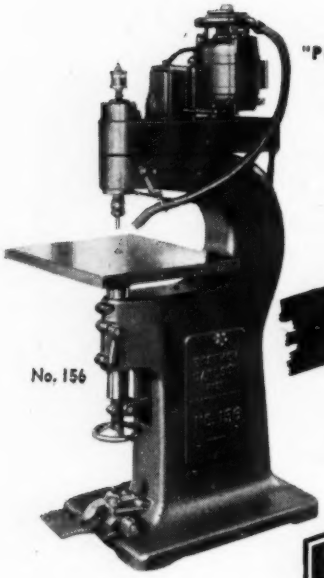
MACHINE WORKS, INC.
WABASH, INDIANA • U. S. A.

"PROVIDE FOR TOMORROW BY BUYING TODAY"...

EKSTROM CARLSON

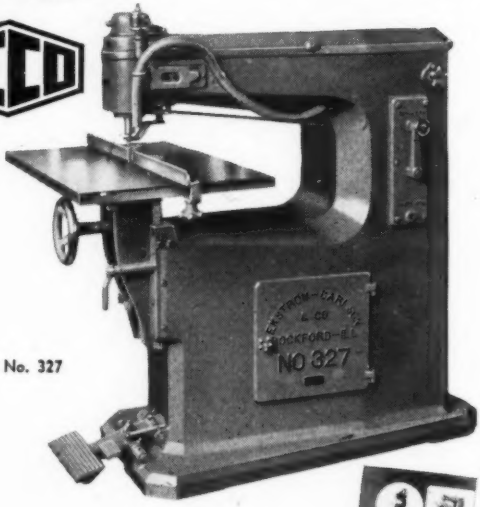
HIGH SPEED ROUTERS



No. 156

ECCO

In all types of woodworking plants and departments, from toy manufacturers to fabricators of fine furniture, from aircraft makers to novelty shops, ECCo High Speed Routers have proved to be one of their most valuable production tools. Perhaps the most important feature, in addition to the basic principles of truly *high speed* routing, is the precision and quality built into ECCo machines. This guarantees accurate and reliable operation throughout an exceptionally long and productive life.



No. 327

CONDENSED SPECIFICATIONS

	No. 156	No. 327
Motors	1½ hp, 3 ph 1½ hp, 1 ph	3 hp, 3 ph 5 hp, 3 ph 7½ hp, 3 ph
Spindle Speeds	20,000 rpm	10,000 rpm 20,000 rpm
Work Table Size	20" x 26"	24" x 36"
Throat Clearance	15"	27½"
Height, Floor to Table	34½" min. 40" max.	34" min. 41" max.
Actuated Table Travel	2¾" min. 4" max.	4"
Collet Capacity	½"	½"

WRITE FOR LITERATURE

Learn all about the interesting details of ECCo High Speed Routers. Write today for Bulletin R100 giving full information.

EKSTROM, CARLSON & CO.

1411 RAILROAD AVE., ROCKFORD, ILLINOIS

MOULDERS • SANDERS • ROUTERS • SHAPERS • CARVERS • PANEL SIZERS • GROOVERS

Furniture Packaging

By Carl J. Bales

This is the fifth article in a series on furniture packaging. Mr. Bales is Sales Manager of the Jiffy Manufacturing Company, Hillside, N.J. His Company has developed a number of packaging materials used by many of the manufacturers of fine furniture throughout the country.

IN THE previous articles of this series we have discussed packaging of novelty tables, bedroom case goods, and upholstered furniture. In this article we shall discuss Package 21F and Package 24F, in that order.

Package 21F may be used for both case goods and dining room tables, but since its use for shipment of bedroom furniture is fairly common and not at all difficult in its application, we believe the use of this package for shipment of dining room tables is the most interesting.

It was found after many experiments and tests that a dining room table could be satisfactorily shipped set up, if the package were properly engineered. As a result, dining room tables were authorized for shipment in this package. It is required that a double faced corrugated fibreboard container testing not less than 275#, with regular slotted top and 3-inch flanges at bottom, be used and that all finished surfaces of the table be first completely covered by blankets described in Item 19501, Note 2, Paragraphs 1, 2, 3, 4, 5, 10 or 12. No additional clearance is required in addition to the above described blankets.

It is permissable to use a four-piece skid diagonally braced on the bottom of the container so constructed that the legs of the table will rest on the cross-pieces of the skid. However, it is good packaging practice to suspend the table so that the legs clear the skid at least 1½". The suspension can be accomplished by the simple framework consisting of two uprights at each end of the table fastened to the skid, and two cross pieces running lengthwise under the rail of the table which fasten to the uprights. Good lumber, with a minimum of weak points, should be used in order to provide the strongest possible support for the table. The 3-inch flaps at the bottom of the carton may be fastened to the underside of the skid with simplex nails or skids.

Package 24F is extremely popular with furniture manufacturers for the reason that it is fast, economical and safe. It is used where two bed ends, either the panel or post type, are shipped in one container. Padding requirements are simple, since the pads authorized in the package can be used to hold the panels or posts apart, enabling the packer to place the finished surfaces of the bed ends together.

In packing panel beds, the top and ends of the panel must be protected, and in packing post beds, a pad may be used to separate the posts and another pad to wrap the two posts completely for protection within the carton. The pads can be quickly tied in place and slipped into a tight fitting carton as specified in the package description. Once in the carton, the bed ends—if properly packed—cannot shift and are not subject to interior abrasion. The following package descriptions and illustrations will describe in detail the packages as authorized in the Consolidated Freight Classification.

Item 19501—Note 2

Where in furniture packages reference is made to specific paragraphs of this Note, blankets, pads, bags or envelopes must comply with the following:

(1) Macerated paper blankets constructed with Kraft paper covers not less than 30 lbs. basis weight. Kraft paper must be coated with asphalt on inner side of sheet. Filler of macerated paper must be of uniform thickness overall. Blankets must be sealed on four sides, and must weigh not less than 1 lb. per 1,000 sq. inches.

(2) Shredded paper packing blankets constructed with Kraft paper covers not less than 30 lbs. basis weight. Filler of shredded paper must be evenly distributed in each pad to correspond to a minimum weight of 2 lbs. per 1,000 sq. inches. The shredded paper must be secured to outer paper wrapper to prevent shifting.

(3) Wood-wool packing blankets constructed with Kraft paper covers not less than 30 lbs. basis weight. The edges of the paper must be lapped not less than ⅝ inch and be glued entire length of blanket. The wood-wool must be not less than 120 knife cuts per inch and must be manufactured of thoroughly seasoned timber, moisture content not exceeding 25%, oven dry basis, and must be evenly distributed and weigh not less than 1 lb. per 1,000 sq. inches. The wood-wool must be secured to outer paper wrapper to prevent shifting.

(4) Wood fibre felt blankets not less than ¼ inch thick consisting of new wood fibres, felted and bonded together into a homogeneous mat of uniform thickness and surfaced on outer side with Kraft paper basis weight of not less than 30 lbs.

(5) Creped cellulose wadding blankets, punch or dimple embossed, having a minimum thickness not less than ¼ inch, weighing not less than 56 lbs. per 1,000 sq. ft., surfaced on outer side with Kraft paper basis weight not less than 30 lbs.

(6) Macerated paper blankets not less than ¼ inch thick. Inside sheet must be made of Kraft paper weighing not less than 30 lbs. basis weight, outside sheet must be made of Kraft paper, basis weight not less than 50 lbs. Both sheets must be coated on inside with asphalt.

(7) Creped cellulose wadding blankets, punch or dimple embossed, having a minimum thickness of not less than ¼ inch, weighing not less than 56 lbs. per 1,000 sq. ft., surfaced on outer side with Kraft paper basis weight not less than 40 lbs.

(8) Wood-wool packing blankets constructed with Kraft paper covers not less than 40 lbs. basis weight. The edges of the paper must be lapped not less than ⅝ inch and be glued entire length of blanket. The wood-wool must be not less than 120 knife cuts per inch and must be manufactured of thoroughly seasoned timber, moisture content not exceeding 25%, oven dry basis and must be evenly distributed and weigh not less than 1 lb. per 1,000 sq. inches. The wood-wool must be secured to outer paper wrapper to prevent shifting.

(9) Excelsior blankets with moisture content not exceeding 25%. Blankets must weigh not less than 1.1 lbs. per 1,000 sq. inches. Excelsior must be evenly distributed to obtain uniform thickness throughout and must be covered on both sides with Kraft paper, basis weight not less than 30 lbs. Edges of sleeve must lap not less than ⅝ inch and be glued entire length. Blankets 18 inches or more in width must have excelsior secured to outer wrapper to prevent shifting and ends must be sealed.

(10) Cotton wadding cushioning blanket weighing not less than 50 lbs. per 1,000 sq. ft., glazed on both sides.

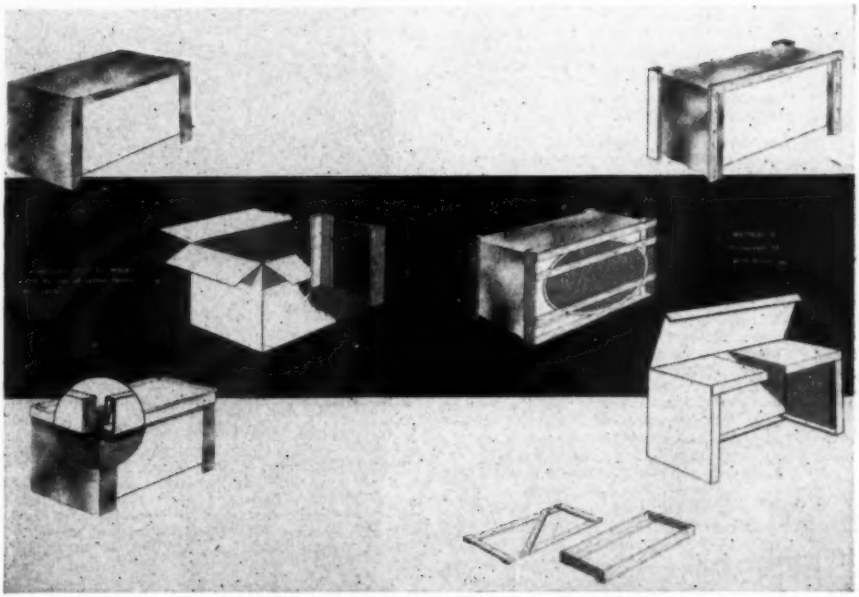
(12) Shredded paper and wood wool blankets constructed with Kraft paper covers not less than 30 lbs. basis weight. Filler must consist of 90% paper shredded in widths not more than ⅛ inch wide and 10% wood wool by volume, distributed evenly in each blanket to correspond to a minimum weight of 1 lb. 3 ozs. per 1,000 sq. inches. Filler must be secured to outer paper wrapper to prevent shifting.

(16) Macerated paper pads weighing not less than 1 lb. per 1,000 sq. inches, covered on both sides with Kraft paper, basis weight of outer facing not less than 40 lbs., basis weight of inner facing not less than 30 lbs., except entire back must be covered by macerated paper bag or envelope weighing not less than 1½ lbs. per 1,000 sq. inches, covered on both sides with Kraft paper, basis weight not less than 50 lbs. Pads, bags or envelopes must be coated on inside with asphalt.

(17) Shredded paper packing pads weighing not less than 2 lbs. per 1,000 sq. inches covered on both sides with Kraft paper, basis weight not less than 30 lbs. Shredded paper must be uniform in thickness throughout pads. Edges of sleeve must lap not less than ⅝ inch and be glued entire length of pad.

(18) Wood excelsior packing pads weigh not less than 1 lb. per 1,000 sq. inches, covered on both sides with Kraft paper, basis weight not less than 30 lbs. Excelsior must be uniform in thickness throughout pads. Edges of sleeves must lap not less than ⅝ inch and be glued entire length of pad.

(19) Pads made of not less than three thicknesses of paper with indentations, covered on both sides with Kraft paper, basis weight not less than 30 lbs. Pads must be not less than 3/16 inch thick. Edge of sleeve must lap not less than ⅝ inch and be glued the entire length of the pad. The indented paper must have basis weight not less than 80 lbs., and the three thicknesses must be so arranged in the pad as to prevent indentations nesting in each other.



Left hand side of picture shows Method A, paragraph 3a. Non-abrasive material must first be applied to case. If completely wrapped in regular Jiffy blanket no clearance forms or non-abrasive wrapping are required. Center shows 3/4" clearance to be maintained by use of corner forms within carton. Clearance may also be maintained by corrugated form around entire perimeter of top.
Method B at right, paragraph 3b. Non-abrasive material must first be applied to case. Additional pads or forms must provide front clearance. Center shows package with mirror — top without mirror. Lower right shows wrapper for use with either of above preparations. Bottom is flat skid as outlined in paragraph 4 and tray as outlined in paragraph 5.

PACKAGE DESCRIPTION

(1) Finish of furniture must be entirely dry and fragile hardware, knobs or pulls must be removed. Galleries must be removed or considered as a surface for clearance.

(2) All finished surfaces except legs or pedestals which do not come with 1½ inches of container walls must be protected by sheet of non-abrasive material.

(3) Containers must be made of double-faced corrugated fibreboard testing not less than 275 lbs. Clearance must be fully maintained between all finished surfaces of furniture and interior surfaces of container by any of the following methods:

(a) When container completely encloses top, front, sides and back of furniture, clearance must be maintained except as otherwise provided for below, by adequate forms of double-faced corrugated fibreboard or wood. The face of any wood form next to finished surface must be padded. Forms designed to extend from top to bottom of container must be placed in each of the four corners to provide not less than ¾-inch clearance between furniture and inside walls of container. When no finished or upholstered part of furniture except top will come within 1½ inches of container, such corner forms need not be used, but ¾-inch clearance must be maintained between top of furniture and the container by forms extending completely around perimeter of top.

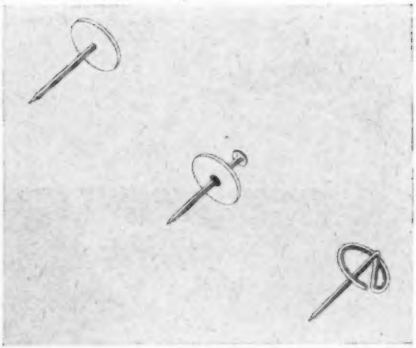
Any top area exceeding 6 sq. ft. or any other area exceeding 12 sq. ft. between any two clearance forms must be reinforced through center of such area by additional clearance form.

Articles may be packed without clearance or with clearance less than specified above, but all finished or upholstered surfaces which come within

1½ inches of container must be completely covered by blankets described in item 19501, Note 2, paragraphs (1), (2), (3), (4) or (5). Non-abrasive material need not be used under blankets. No detachable mirrors may be included unless mirror is packed in accordance with paragraph (3) (b).

(b) Container must cover top, front and sides of furniture. A three-piece wood frame consisting of two uprights extending from top to bottom of container, surmounted by horizontal piece, all made of not less than ⅝x2½-inch lumber, must be firmly attached to back of furniture. Frame must be of sufficient size to extend not less than ¾-inch above top and beyond sides of furniture. Back of container must have flanges or flaps not less than 3 inches wide attached to wood frame by coated nails, spaced not more than 15 inches apart or by wood or metal strips. Clearances on the front must be maintained by the forms and in the manner specified in paragraph (a). Any top area exceeding 6 sq. ft. or any other area exceeding 12 sq. ft. between any two clearance forms must be reinforced through center of such area by additional clearance form.

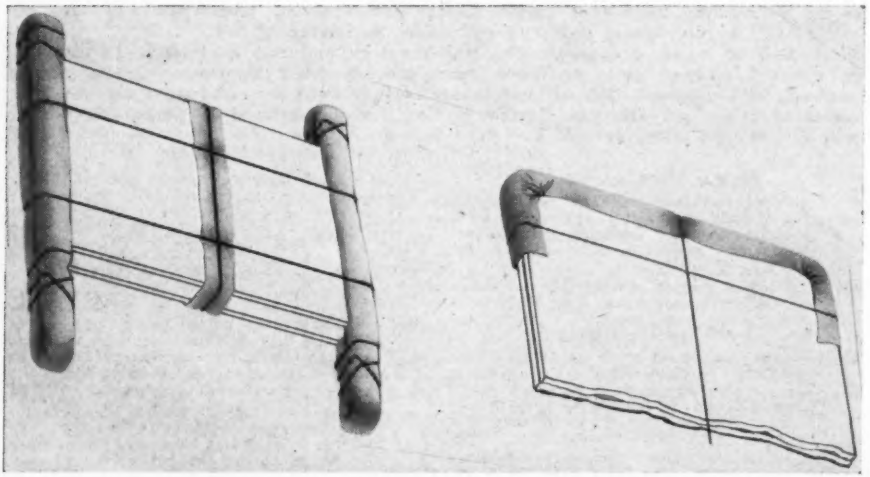
When detachable mirror is included in package, clips, rosettes or similar fastenings must be removed and mirror must be suspended on wood frame constructed of not less than four members made of not less than ⅝x2½-inch lumber. There must be not less than 1-inch clearance for mirror glass.



Types of nails are illustrated here. From top to bottom: simplex type nail, nail and washer, one piece wire type nail.

When the frame containing the mirror is of sufficient size to extend not less than ¾-inch above top and beyond the sides of furniture, this frame may be substituted for the three-piece frame described in the preceding paragraph. All other clearances must be maintained as described in paragraph (a).

(c) When container tests not less than 350 lbs., not less than 1½-inch clearance must be maintained by the three-piece wood frame described in paragraph (b) or by frame containing mir-



Headboard and footboard securely tied together. Pads must also be placed between posts of headboard and footboard to protect finished surfaces. When headboard equals or exceeds height of posts the top must be padded.

They're off

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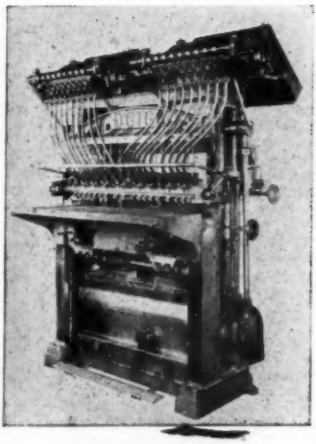

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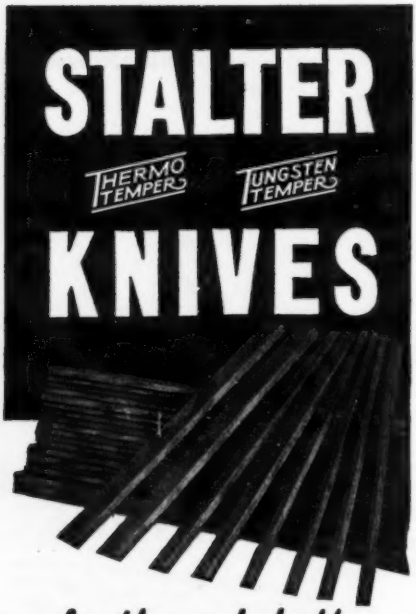

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ror described in paragraph (b), but no other clearance forms will be required.

(4) When container has flanges or flaps at bottom, flanges must be not less than 3 inches wide and furniture must rest on a four-piece frame made of not less than $\frac{5}{8}$x2$\frac{1}{2}$-inch lumber diagonally braced. Frame must fit into base of container and bottom flanges or flaps must fold over frame and be securely nailed at each corner with two nails and an additional nail every 15 inches or fraction thereof of perimeter of base frame, OR container flanges may be secured by two wood runners nailed lengthwise of package.

(5) When container has no flanges or flaps at bottom, furniture must fit into wood tray constructed of not less than $\frac{5}{8}$x2$\frac{1}{2}$-inch lumber consisting of two pieces forming runners and four pieces on edge forming sides and ends of tray. Container must be nailed through container walls into wood tray with coated nails spaced every 15 inches or fraction thereof of perimeter of tray.

(6) All nails used to fasten fibreboard to frame or skid must be coated and have heads not less than $\frac{7}{8}$-inch diameter or with washers of not less than $\frac{7}{8}$-inch diameter.

CL Shipments

Furniture authorized for shipment in package 21F, when in straight CL or in mixed CL of furniture only, see Note, may be packed as follows:

Paragraphs 1, 2, 4 and 5 must be fully complied with.

Containers must comply with requirements of paragraph (3) except as follows:

Container may be 200 lb. test board. No clearance forms will be required, except container described in 3 (a) must have corrugated forms at each of the four corners; containers described in 3 (b) must have wood frame as described. Mirrors must be packed as provided in 3 (b).

Note.—When packed in conformity with requirements for CL shipment, furniture will not be accepted for reshipment in LCL service nor in mixed CL with articles other than furniture.

PACKAGE DESCRIPTION

(1) Bed ends in double-faced corrugated fibreboard box with full overlap construction at top and bottom complying with all requirements of Rule 41 for boxes testing not less than 200 lbs., except gross weight must not exceed 85 lbs. or when gross weight exceeds 85 lbs., but does not exceed 100 lbs., fibreboard must test not less than 275 lbs. Maximum dimensions must not exceed 125 united inches. Finished surfaces of posts in contact with interior of container must be completely covered with pads and when head panel height equals or exceeds height of posts, top of panel must be padded. Head and foot panel must be securely held together, OR

(2) In double-faced corrugated fibreboard box with full overlap construction at top and

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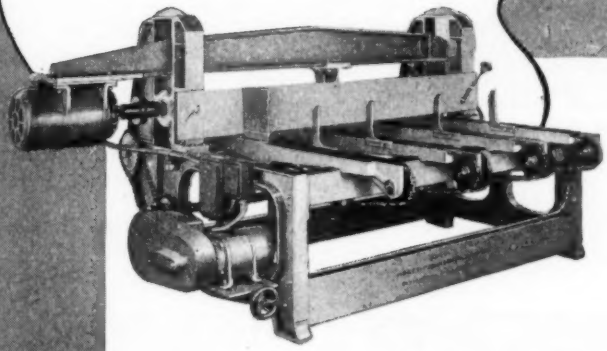
No. 435 MULTIPLE CUT OFF SAW EQUALIZER AND GROOVER



Versatile is the name for this No. 435 machine. Not only will the standard unit perform any multiple cutting, grooving or equalizing job—but it will simultaneously perform any combination of them.

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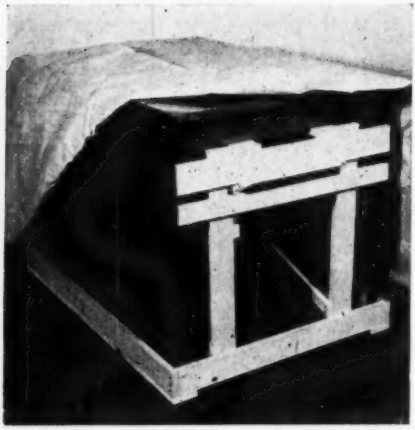

Dining table prepared for shipment when set up.

bottom comp'ying with all requirements of Rule 41 for boxes testing not less than 200 lbs., except gross weight must not exceed 130 lbs., and dimension limit must not exceed 130 united inches. Box must be reinforced with a wood frame consisting of four pieces at top and four pieces at bottom. One upright must be used at each end of frame securely nailed to top and bottom frame. Uprights and frames must be made of lumber not less than $\frac{5}{8}$×2$\frac{1}{2}$ inches. Bed ends must be placed on opposite sides of uprights and securely held in place. Finished or upholstered parts which come in contact with frame must be protected by pads or padding. Frame must provide at least $\frac{3}{4}$-inch clearance. When two pairs of bed ends are packed in same container, two additional uprights must be used.

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THE SEASONING of forest products is old as the industry itself but still lagging in appreciation of the art. Our government has spent millions of dollars and some of our finest men have spent their lives to help bring out the importance of quality drying.

Kiln operators clubs have been formed, state forestry associations have tried to help, but in 85% of all plants we still find production stressed over quality. It is with regret that so much of the "proven-fact" research work done by the U. S. Forestry Laboratory finds itself shelved or in the waste basket. Not until management realizes that a part of the log scale over-run is being consumed in the kilns and until management takes a direct personal interest in the facts concerning improper kiln drying and insufficient kiln capacity, will this be overcome.

There is no doubt that in many kiln drying cases, operators have gone overboard on the technical side, which tends to defeat its purpose. As in the case of the plant owner who has spent years educating a son to take his place as manager, but now that his son is out of college, the dad will have to spend another few years uneducating him to become a mill man. True enough, kiln equipment has come a long way, but it is a long way from the push button stage.

Not any two kilns of the same design on the same location will function just alike and certainly they will vary in different locations. Any of the current design kilns on the market today can do top quality drying IF the relationship of design, construction, cost, and input of energy is kept in line. This is true whether they be steam, gas, or sawdust heated.

Good common sense reasoning and an honest desire is the most important step in improving drying. With 18 years as an operator and 10 years as engineer, looking back, the inspiration and desire for a greater knowledge in good drying in the early years was stimulated by personal talks to plant managers and visits to their kilns.

It is the writer's opinion that in the designing and manufacturing of kilns, we have spent too much valuable time theorizing in place of improving on that which has been successful.

With the low cost of building kilns today, we can follow the scientific law—"a concise statement of a habit of nature"—which so plainly has proven to us that properly dried lumber can be dried only as fast as the type and cell structure of the wood itself will permit. In most cases this means milder temperatures and longer drying time, and the need for more kilns to maintain production.

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In the past few years there has been a great deal written and said about the use of natural gas for heating kilns. This writer designed and put into operation the first (now patented) internal oven and fan circulation natural gas kilns nine years ago. For the past four years he has been experimenting with fuel oils, butane and sawdust. Our trails have covered several states and a large number of jobs, and it is our experience that fuel oil has proven too high: $3.00 to $6.00 per M. Butane is very nice to control and good results can be obtained for 1/3 of the above cost but LPG dealers and jobbers are charging too much in most cases.

With natural gas @ 25c to 35c per MCF, we are drying 4/4 and 8/4 green Southern pine in 72 to 96 hours at a cost of 75c to $1, air dried hardwood 25c to 50c, with less degrade than in some of our steam kilns. Our gas kilns of today are as practical as your floor furnace in your home and the very low cost of maintenance the year round is as cheap or cheaper than the maintenance of any other source of heat. This has not been the result of elaborate engineering but with the cooperation of several gas companies and associations and good common sense thinking. In

End view of gas kiln.

Inside kiln view, direct gas heated.

the past four years we have put into operation over 100 different installations from single units to batteries of eight. In the years of 1946-47 we had five fire losses, but with the cooperation of operators, combined with full automatic controls, from 1947 to date not a loss. Our choice in the gas kilns is the ground level internal sytem which we term direct and indirect heat. By the direct method the results of all combustion (C.O. and water vapor) is released into the building which we find helps in drying. The indirect method is used when the entire steel oven is vented to the outside of the building and by increasing the oven radiation the efficiency is about the same as direct.

In either case heat distribution with the use of gas can be controlled to any degree whether compartment or progressive operation is used. With water spray and proper humidity ventage any kiln may be used for drying any type lumber. Both fan and heating systems are interlocking; in case of failure of

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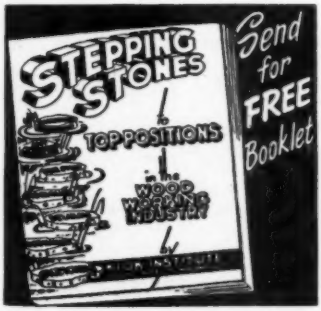

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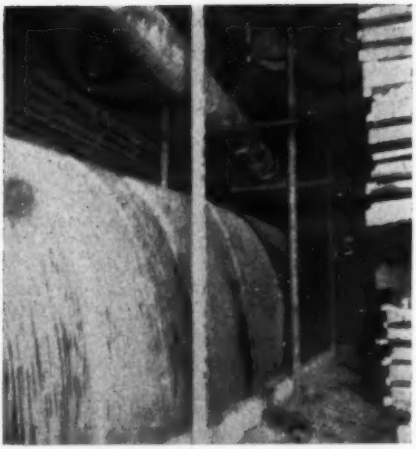
either, both are cut off by automatic controllers.

Where neither natural gas or steam is available our design of the outside dutch oven sawdust kiln is doing very high class work. This oven is placed between track just outside of the building and combustion chambers extend inside of the building and are covered with solid welded 14 gauge steel the entire length of the building and smoke stack on the green end extending out of the building. About one half of the green dust from one saw mandrel is more than enough fuel for one kiln drying green pine. Drying cost is $1.00 per M. on green pine.

Any old kilns can be brought up to date with very little expense by carefully planning a fan circulation system to blend with the heating system so that the full benefit of both may be realized without wasting fuel and time. A number of very good inexpensive automatic controls are now available.



Indirect heating oven, sawdust burning. Dutch oven not shown.

There is much we do not know or understand about drying but if each of us would properly do those things we do understand a great advancement will be realized. and the unknown will be uncovered. Then we will have helped in the utilization and waste program, in which loss by seasoning exceeds forest fires.

The End

Shallow men believe in luck. Strong men believe in cause and effect. In the human mind, this tie of fate is made alive. In us it is inspiration.

—Ralph Waldo Emerson.

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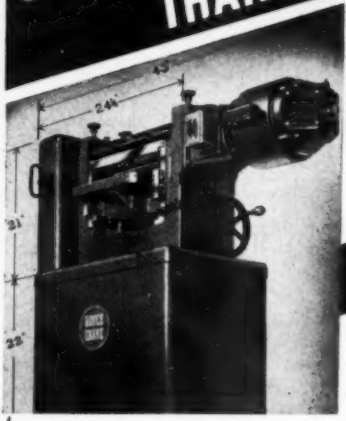
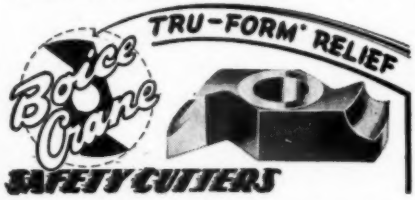


. . . the only one that includes every essential feature of larger, more expensive planers—$50.00 to $100.00 under what you would expect to pay. Built for extra long life.

Handles jobs impossible on larger planers. Planes material as short as 6½". Planes hard woods down to ⅛" thick, smooth as silk and to a thousandth of an inch precision without tearing. Massive, one-piece main frame. Powerful infeed roll. Two table idler rolls in bronze-bushed self-aligning journals. Automatically adjusts when work thickness varies. No troublesome clutch. Quieter. Instant power feed control without stopping the motor, engine or lineshaft power. 12¼"x20" table. Choice of 1½ and 2 H.P. direct to cutterhead, or V-belt motor drive. Bench and floor type units.



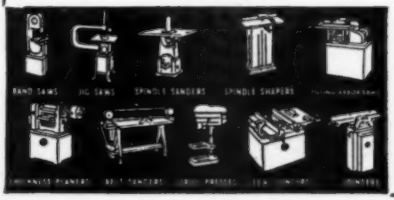
ANOTHER BOICE-CRANE "FIRST"

The first cutters at moderate prices with CIRCULAR or INVOLUTE RELIEF (also called flattened-arc relief, cam-profiled relief.) The "Tru-Form" principle involves design and new machining methods that:

1. Assure cleaner, more burn-free cutting.
2. Cut the true, original shape and dimensions as long as the cutter lasts.
3. Provides a larger rake angle. Never a laggy, scraping cut, always easy and clean cuts that shear or shave the work without vibration.
4. Deliver up to 50% more usable cutter life.
5. Provide improved clearance so necessary for successful high speed shaping.
6. Reduce cutting edge crumbling or breaking down—common with straight relief cutters. "Tru-Form" tooth shape reinforces cutting edge and dissipates more heat.

Fine tungsten tool steel. Deep uniform hardening. Precision formed. Razor sharp. Complete line of individual cutters and sets for cabinet work, mill work, window and storm sash and doors. Designed for Boice-Crane Shapers but improve performance of all other makes.

Sold through industrial supply distributors in most cities.



BOICE-CRANE COMPANY

931 Central Avenue • Toledo 6, Ohio

Please send free literature on Boice-Crane

( ) Planer.
( ) New 44-page Catalog No. 50 on entire line.
( ) Bulletin on Tru-Form Safety Cutters for Shapers.
( ) Shapers.

Name.....
Firm.....
Street.....
City & State.....

WOOD New Literature Section..

THE LAW AND PRACTICE RELATING TO SAFETY IN FACTORIES,

International Labor Office, 1825 Jefferson Place, N. W., Washington 6, D. C. 1701 pp. $8.50

"There is the stark fact that every year millions of factory workers are the victims of industrial accidents." This is one of the reasons given in the preface for compiling this record. Safety measures for nearly every industry from 14 different countries are listed. The report aims at providing both a general survey of the industrial safety movement, and an analysis of safety legislation. National and international organization are given in Part I, while legislation is elaborated in Part II.

This book should be of special interest to those recognizing the value of promoting safety in factories.

INCENSE CEDAR

An illustrated facts folder by Western Pine Association, outlines botanical history, classification, growth range, properties and uses of incense cedar. This is eighth in a series devoted to the three western pines and associated woods.

Western Pine Association, 510 Yeon Bldg., Portland 4, Ore.

NEW DEWALT

The machine's flexibility is graphically illustrated in the folder, "The New DeWalt." "Every time you change the cutting tool you have another machine" claims this bulletin. These changes are pictured as well as the safety features.

Dewalt, Inc., Lancaster, Pa.

DARRA JAMES CATALOG

The Darra James Power Tools are fully described in the attractive, spiral-bound catalog issued by Toolkraft Corp. The machines and their accessories are pictured and complete specifications, as well as a price list, are given.

The above Company, Springfield, Mass.

STANDARD MOULDING BOOK

Over 250 mouldings, shown in actual size perspective, are illustrated in the 4th edition of Jones & Orth's "Standard Moulding Book." A list of mouldings and a price list are included.

The above Company, Box 3064, Seattle 14, Wash.

DRILLS, REAMERS AND PUNCHES

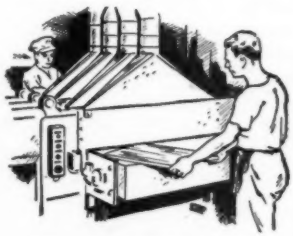
Whitman & Barnes, 40600 Plymouth Rd., Plymouth, Mich., has recently published a new general catalog known as No. 102. The catalog describes, lists and illustrates tools used in drilling, reaming and punching operations. Included are drills and reamers made of high speed, carbon, cobalt steels and tungsten carbide and interchangeable punches made of carbon and high speed steels.

Copies of the catalog will be sent upon request to the above Company. Please write on your firm's letterhead.

Another big BEHR-MANNING *sanding advance*

NEW...

At least 2 to 1 and often 3 and 4 to 1 over ordinary glue bond abrasives, are the production records for new RESINIZED ADALOX® Paper. New RESINIZED ADALOX gives superior finishes, too — it resists shedding and loading on high speed runs. Its resinized bond defies sanding heat, and the electro-coated aluminum oxide grit is held firmly in place, sharp-end-up, on rugged E-weight backing. The coarser grits are DURABONDED® for extra grain-grip.



RESINIZED ADALOX Paper is available in grits 320-9/0 through 36-2. It comes in rolls and belts 10" to 36" wide — also in discs and special size sheets.

New RESINIZED ADALOX Paper now joins other Behr-Manning resin-type sanding products such as RESINIZED DURITE® Paper and RESINALL® GARNET Fibre, in boosting woodworking output and slashing costs. Try it in your plant. Our trained Field Engineers will be glad to demonstrate. Address Dept. WD-8.

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BEHR-MANNING

TROY, N.Y.

Use NORTON® *abrasives* sharpening stones

KORINA

natural blond wood

BY JOHN L. PAXTON

FORMER ISSUES of WOOD WORKING DIGEST have carried stories of Korina,* the blond wood, veneer and plywood. Now a few words about Korina lumber. The growing popularity of blond wood is not surprising and, like natural blond glamour gals, natural blond lumber is preferred.

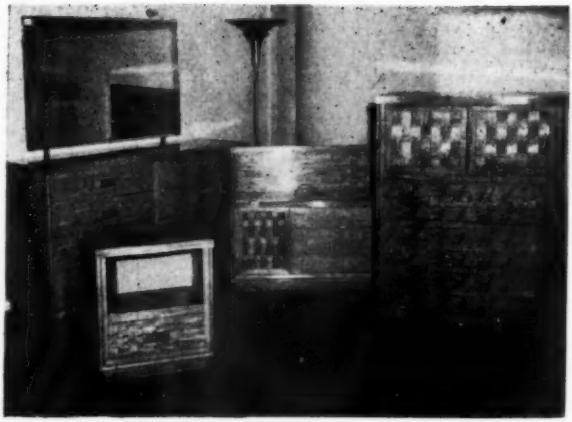
The search for natural blond wood has been world wide until, in the Belgian Congo, Africa, a practically inexhaustable supply was found. The tree from which this blond lumber is made is known as "Limba." Unfortunately, after sawing, Limba stained. After many experiments, it was realized that accelerated logging methods and chemicals prevented stain. As soon as the tree fell, it was cut into lumber, chemically treated and kiln dried. Korina, the wondrous new wood, was ready for America. The chemical treatment is Korina's beauty secret. The swelled, bell-shaped trunk base of the Limba tree is quite similar to our American southern cypress and grows in a corresponding environment of swampy river bottoms.

From six to eight feet above the swelled root area the tree rises straight, and clear of limbs to heights of 150 feet or more. The stand of Limba trees stretches along the western shores of Africa with the principal growth occuring in the Belgian Congo. Korina lumber is cut from the trees grown in this rich soil belt which produces the finest of timber.

Strangely enough, the heart wood of this species is black and quite hard. The sapwood area of clear, light colored wood far exceeds the amount of heart wood in the average tree. This Korina from the Congo is clear of knots, is all light colored and close grained.

The popularity of this Korina lumber with manufacturers of furniture, radio-television, store fixtures, pianos and wall paneling is easily understood when the facts are known. Korina wood possesses a completely uniform blond color requiring no bleaching to obtain a natural modern light finish. Furthermore, it is also adaptable to many other finishes. Korina lumber matches perfectly with Korina veneer and plywood. Because of its firm texture and close grained characteristics, Korina mills, shapes and carves easily, and waste from checking and other natural defects are nil. As far as beautiful grain is concerned, this blond wood has all the distinctiveness of its dark competitor mahogany, and that is praise indeed.

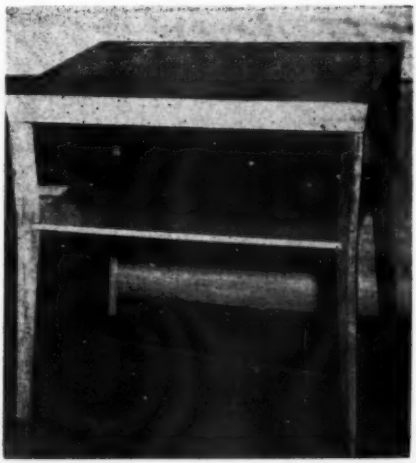
*Korina is a registered trade mark of the U.S. Plywood Corp. Korina lumber, the natural blond wood of exquisite grain, is moderately priced and available for immediate delivery. John L. Paxton is sales manager of the Chicago branch of Frank Paxton Lumber Co. This Company has an exclusive territorial distribution of Korina lumber.



Mouldings and tops of solid Korina blend into this beautiful furniture made by the Ramseur Furniture Co.

Korina is competitively priced with other fine furniture woods.

The entire manufacture of Korina lumber is done in Africa, using modern equipment insuring best quality. It is band sawn and double end trimmed, anti-stain treated and kiln dried to 18% m.c. Before shipping, it is inspected, tallied and selected for color and texture.



The Globe Cabinet Co. finds that solid Korina lumber matching Korina plywood so perfectly makes ideal legs and mouldings for its various tables.

Korina lumber is available in any desired quantity, LCL or carload lots. It is expertly manufactured in 1-,1¼-,1½-, 2- and 3 inch thicknesses and can be obtained in random widths and lengths, in straight or mixed carloads, all clear standard grade. Clear furniture squares 2 x 2 x 30 inches are also available. It is an interesting fact that all Korina lumber comes in first grade only. It is known as clear standard, which is comparable, though generally superior to, our first and second grades as designated for domestic hardwoods.

The cargo ships exporting Korina lumber leave Africa about the 15th and 25th of each month. On carload shipments a 60 to 75 day allowance should be made from Africa to plant car sidings in this country, if you operate your own kilns. Re-kiln drying in transit can be arranged for if desired.

LOGAN CATALOG

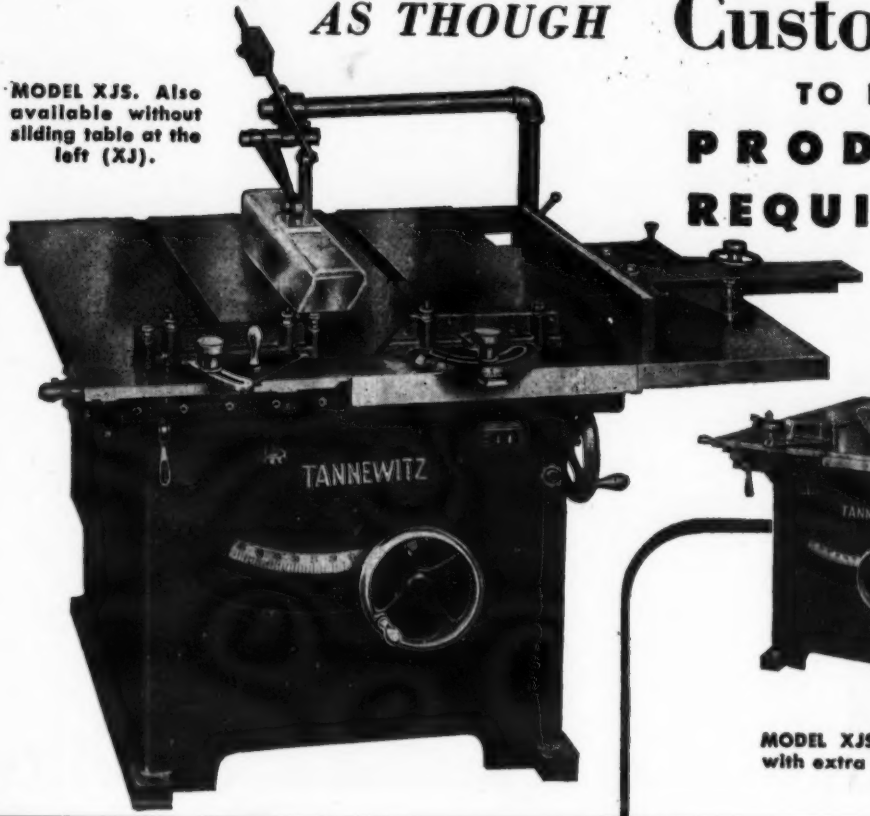
Stationary and rotating air cylinders, and air-operated vises are described in Logan Catalog No. 100. Rabbeted, foot and trunnion mountings, plus many others, are fully illustrated. Dimensions for each are given.

Logansport Machine Co., Inc., Logansport, Ind.

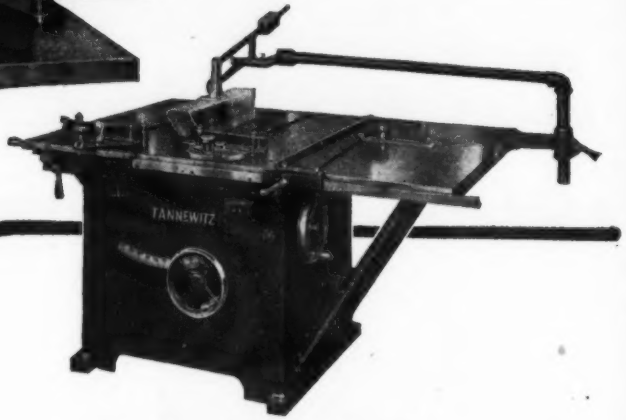
AS THOUGH **Custom Built**

TO FIT YOUR

PRODUCTION REQUIREMENTS



MODEL XJS. Also available without sliding table at the left (XJ).

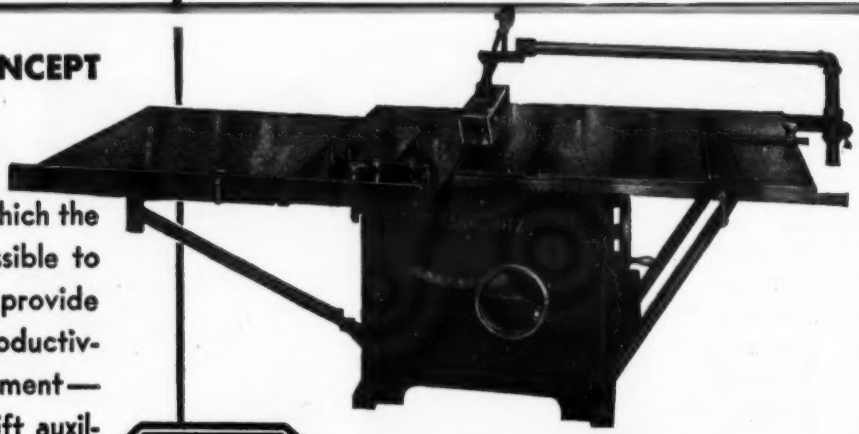


MODEL XJSW. Same as XJS, but with extra large table at the right.

MODEL XJSW. Same as XJS, but with extra large table at the right.

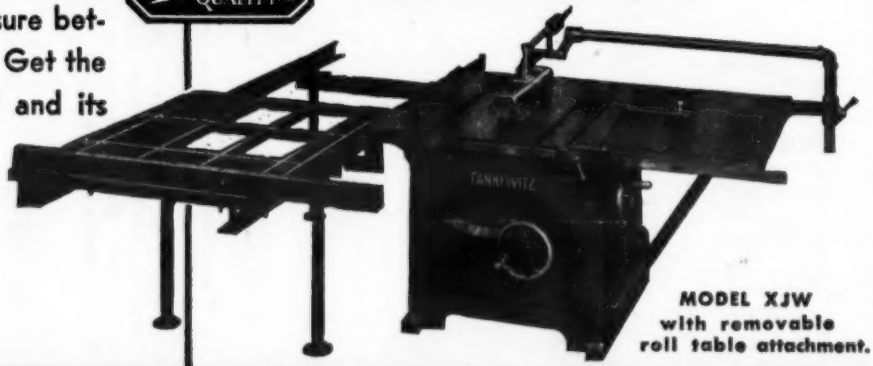
A NEW AND BETTER CONCEPT IN MITERING EFFICIENCY!

With the five different tables with which the Type XJ is available, it is now possible to obtain the exact machine which will provide the maximum of convenience and productivity for every kind of mitering requirement—one that will do away with make-shift auxiliary tables and awkward working conditions, that will step up production and insure better work . . . all at moderate price. Get the complete facts concerning the XJ and its variations. It's entirely unique in the mitering field . . . Tannewitz quality throughout for a lifetime of perfect service. Simply ask for "Bulletin XJ".



Tannewitz QUALITY

MODEL XJSW with removable extended sliding table at the left.



MODEL XJW with removable roll table attachment.

THE TANNEWITZ WORKS GRAND RAPIDS, MICHIGAN

DOCKSON PROTECTION

IS... *Built for Better Service*

GOGGLES

A complete line of scientifically designed eye protection that offers easy to wear, long-lasting safeguards against particles, fumes, injurious rays or chemicals. Dockson Series 40 and 76 Goggles shown here.

FACE SHIELDS

Tough, featherweight face protection for all types of hazards. Our complete line of shields is carefully engineered to provide the utmost in comfort and safety. Dockson Series 1120 and 1180 Face Shields shown here.

HELMETS

Each Dockson Helmet is built for severe service and greatest protection. Easy to raise or lower, stays put at any level, cushioned headgear for comfort. Dockson No. 1475 and No. 1250 Helmets shown here.

THERE IS A DOCKSON DISTRIBUTOR NEAR YOU — NAME ON REQUEST. Send for our complete catalog of head and eye protection.

Dockson CORPORATION

3839 WABASH STREET • DETROIT 8, MICHIGAN

mechanical guarding of Power Feed Woodworking Machines

BY JOSEPH E. GLASS

The following tables present the various parts of wood working machines responsible for accidents. The protection measures were suggested by an insurance company. This article may serve as a checklist for safety precautions in your own plant.

Tenoning Machine

Machine Part	*Accident History*	*Protection*
1. Head or Saws	1. Reaching into head	1. Cover unused part with 1/16th inch metal. (Guard can act as exhaust hood). Note: use opening so head can be changed easily.
	1-A. Knives thrown by head	
2. Feed Chains and Sprockets	2. Hand caught and pulled into head	2. Stop emergency switch—front and rear
	2-A. Reaching in and caught by pinch points	2-A. Enclose frame except part carrying stock
		2-B. Extension to conveyor at rear—18 inches or more

Boring Mills

Machine Part	*Accident History*	*Protection*
1. Chucks	1. Sleeves caught by screws	1. No projecting set screws
2. Bits	2. Sleeves caught by screws	2. Enclose above material
3. Spindle and Universal Joint	3. Spindle breaks and flys	3. Barrier guard

4. Treadle		4. Metal cover
5. Belts		5. Enclose
6. Control	6. Accidental starting of mill	6. Mount switch under table, center, with safety shields
7. Compressed Air	7. Eye injuries	7. Shield or goggles

Drum Sanders

Machine Part	*Accident History*	*Protection*
1. Feed Rolls	1. Hand caught and pulled into machine by conveyor (lost one finger)	1. Semicylindrical guard, metal ⅜" above material
2. Drum	2. Hand burned by roll	2. Enclose top of drum
3. Control Switches	3. Start machine while changing rolls	3. Locate accessible but not in position for accidental starting
4. Conveyor	4. Fingers caught by conveyor as it goes in bed	4. Cover on rear

Lathes

Machine Part	*Accident History*	*Protection*
1. Cutting Heads	1. Hand caught in heads Note: Stand to one side to avoid thrown heads	1. Metal, 1/16", cover 1-A. Exhaust head, 1/16" metal act as guard
2. Control Switch	2. Lathe starts while changing heads	2. Install electric interlock on cover 2-A. Put switch on wall.

Self-Feed Rip Saw

Machine Part	*Accident History*	*Protection*
1. Feed Rolls	1. Hand caught by rolls (short stock)	1. Hood, metal, ⅜" above material
2. Saws	2. Kick-backs	2. Non-kick-back fingers
3. Conveyors	3. Hand caught by chain at in-running point	3. Movable table 3-A. Cover over conveyor at rear

Planers

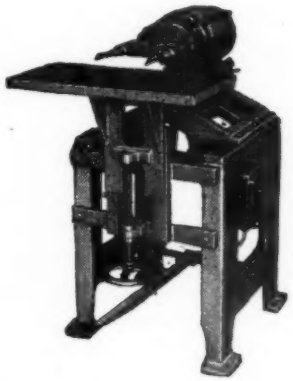
Machine Part	*Accident History*	*Protection*
1. Heads		1. Enclose metal, 1/16" (Guard can become part of exhaust)
2. Feed rolls		2. Cover, hood or semicylindrical guard

	2-A. Kick-backs	2-A. Sectional feed rolls Note: use kick-back fingers with solid roll
3. Belts	3. Caught by in-running belt	3. Barrier guard

Stickers-Moulders

Machine Part	*Accident History*	*Protection*
1. Heads	1. Hands caught by heads while removing splinters or making adjustments (lost one finger)	1. Cover heads, metal, 1/16" (Rear head—attach cover to guide)
2. Conveyor	2. Hand caught by conveyor bar while feeding	2. Cover opening in frame to eliminate shear between frame and conveyor
3. Controls	3. Hand caught by head when operator thinks he stopped motor	3. Paint head controls color corresponding to guard on head

This speech was presented at last year's National Safety Congress. The Congress will be held this year during the week of October 16.



Simple . . . . . But So

EFFECTIVE

INDIANA TYPE 15H
TWO SPINDLE BORER
Foot or power feed

Also 15M:2 air-operated
Boring capacity: 1" to 25".

INDIANA FOUNDRY, MACHINE & SUPPLY CO.
Designers, Builders of Special Equipment
BRAZIL, INDIANA

CUT COSTS, make stronger assemblies with QUALITY CONTROLLED "ROCKFORD-PHILLIPS" or SLOTTED HEAD WOOD SCREWS.
Stock of all sizes and head styles ready for shipment.
FOR COMPLETE INFORMATION AND PRICE LISTS WRITE FOR OUR NEW WOOD SCREW Catalogs No. 202 and No. 106.
We fabricate a complete line of STANDARD • AUTOMOTIVE • AIRCRAFT & SPECIAL Threaded Fasteners.
"Quality Controlled" Products
"ROCKFORD" Screw Products Co.
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Phone: 4-9441 or Wire: RK 88

WILLSON CATALOG

"Willson for Industrial Safety" is the attractive, 64 page catalog, brimful of helpful information, issued by Willson Products, Inc. Every type of product for personal safety is adequately described and illustrated. A hazards table with recommended protection plus the story of Willson research and development are some of the features. A price list is included. Especially practical for those responsible for the personal safety of men in their plants.

The above Company, Reading, Pa.

SAFETY CONGRESS ANNOUNCED

The 38th National Safety Congress and Exposition is to be held Oct. 16-20, Chicago, Ill. Sessions on industrial safety are scheduled for Stevens, Congress and Morrison hotels. For further information write R. L. Forney, general secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

SAFETY POSTERS

Safety glasses, not personal glasses, should be worn on the job by workers, is the theme of a new series of 10"x13½" posters being released by American Optical Company, Southbridge, Mass.

Designed to encourage workers to wear goggles, the posters point out that Rx safety glasses protect workers' eyes whereas personal glasses do not. In addition, personal glasses should not be exposed to hazards that may chip, crack or pit the lenses.

Industrial concerns desiring to receive these posters may obtain them by contacting the nearest American Optical Branch Office.

STOP FIRE AT THE START

We have spent some time and space in our editorial columns stressing forest fire prevention. However, it is well to also consider fire in our immediate surroundings. We should like to quote from "Blazes," a magazine published by the American-LaFrance-Foamite Corp., Elmira, N. Y.

"No one expects a fire! No one wants one; but they do happen!

"Between sunrise and sunset tomorrow, 1650 building fires will kill 28 American people, disfigure or injure 60 more!

"Fire will attack 700 homes, 139 stores, 80 factories, 7 churches, 6 schools, 4 theatres and 3 hospitals—that's just the daily average—and it will cost about $2,000,000 in property loss, for this one day's destruction.

"Approximately 60% of all fires reported are put out by the use of fire extinguishers with little or no damage.

"Now is a good time to check your extinguishers to be certain they are in proper working order. If you are not protected against fire with the correct fire extinguishing device, write us today for the address of our nearest district office.

"Be prepared to extinguish a fire when it strikes, by having the right unit on hand for the kind of risk involved."

HAND TOOL GUARDS

Guards for edged hand tools are described in the R. H. Buhrke Company's Folder No. 94901. These guards are made of vulcanized hard fibre, and can be equipped with a snap to hang onto a workman's belt. Guards can also be furnished in leather. Cable saw, axe, chisel, draw knife guards are a few of the many guards pictured.

The above Company, 4701 W. Grand Ave., Chicago 39, Ill.

BLEACHING COMPOUND FIRE

An employee was spraying baseball bats with a bleaching liquid at a Canadian woodworking plant. The strong oxidizing agent reacted with paint deposits, causing an explosive flash of fire in the exhaust stack. Flames roared into the booth, igniting residue-laden paper lining. Six sprinklers in the booth and outside operated and confined the fire while employees put it out with foam extinguishers.

Water leaked through the floor, damaged an office ceiling and wet down supplies in a storeroom. About 600 finished hockey sticks were also drenched.

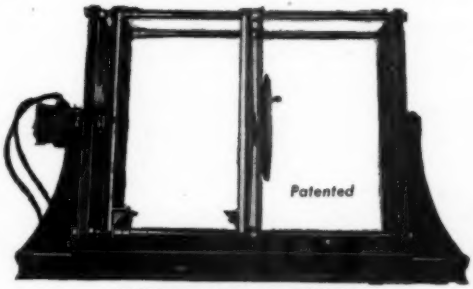
Bleaching compounds that react violently with paints or varnishes need a separate spray booth reserved for this operation.

Factory Mutual Record

Lancaster

NO. 1100-C AIR OPERATED REVOLVING CASE CLAMP

Steel collars that equalize pressure, welded steel base, roller bearings, adjustable aluminum case supports — equipped with squaring devices, adjustable locking device, adjustable balancing weight—to assure equal distribution of weight and effortless revolving, air control on each side of machine. GUARANTEED TO CLAMP SQUARE REGARDLESS OF LOCATION OF CASE IN JAWS.



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J. M. LANCASTER, INC.

P.O. BOX 962

HIGH POINT, N. C.

WOOD-LOK®
a proven
production tool

COLD GLUE ENDS HUMIDITY SLOWDOWNS

WOOD-LOK is a cold, always ready-for-use resin glue. Its fast setting speed, strong, resilient bond are unaffected by varying humidity conditions. Shop windows can be kept open . . . steam coils and glue heaters turned off . . . and a healthy ventilation can be maintained to keep workers on the job.

If high humidity and hot glue are slowing down your summer production schedules, we'd like to demonstrate WOOD-LOK right in your plant.

® (Patent applied for.)

schedules, we'd like to demonstrate WOOD-LOK right in your plant.

(Patent applied for.)

COOLER WORKING CONDITIONS

•

FASTER SETTING SPEEDS

Photo courtesy BAVINCO BROS., Buffalo, N. Y.

Address: 270 Madison Ave., NEW YORK 16; 3641 So. Washtenaw Ave., CHICAGO 32; 735 Battery St., SAN FRANCISCO 11; and other principal cities. In CANADA: National Adhesives (Canada) Ltd., TORONTO and MONTREAL. In ENGLAND: National Adhesives, Ltd., SLOUGH.

National ADHESIVES

OK! SHOW US how we can beat the humidity with National's WOOD-LOK. ☐ Have a representative call on_____
☐ Send a free sample.

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EVERY TYPE OF ADHESIVE FOR EVERY INDUSTRIAL USE

12" HEAVY DUTY
Darra-James Tilting Arbor Saw
LOWEST PRICE EVER OFFERED!
WAREHOUSE CLEARANCE

Now, for the first and maybe last time, you can buy a heavy duty 12" saw for less than you pay for smaller, lighter units. Quality made . . . designed for tough service, these saws are a real bargain. Compare them point by point—prove to yourself that this is the best buy you ever saw! Heavy (430 lbs.), massive construction—this is no lightweight—the Darra-James 95C will give years of production service. BRAND NEW...offered on a fully guaranteed basis. These saws formerly sold for $295.00.

MODEL 95C

OUR PRICE $179.50 F. O. B. Waterbury, Conn.

Less motor, switch, blade, guard and splitter.

Guard, splitter and anti-kick back Pawls $7.00

We can furnish new 2 HP motors as follows: Standard make Ball Bearing 1 PH. 60 Cycle, 110-220V., 1750 RPM....$79.20
Same as above—3 PH. 60 Cy. 220-440 V.....$55.20

Well rated firms net 10 days—others send check with order.

FEATURES:
- **4" Cut • 42" x 32" Table, including extensions**
- **¾" Arbor with Heavy Duty New Departure Bearings**
- **Positive Tilt and Elevating Mechanism • Extra deep Mitre Gauge Slots**
- **Self-Indexing Mitre Gauge mounted on extra long precision made guide bar • Cast aluminum self-aligning Rip Fence—won't creep**
- **Standard Motor Bracket mounts any motor in 204 or 224 Frame**
- **Weight 430 lbs. • No die castings used anywhere**

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ACME EQUIPMENT CO. INC.
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HIGH SPEED PLANER KNIVES *are* O.K.'s

For QUALITY PERFORMANCE

Here is the finest. All OK Thin Planer Knives heat treated for absolute uniformity, both in hardness and temper. Made of special steel.

OK No. 4—special type, high speed steel for wood-working. Easily withstands heat of fast heavy speeds on rough, knotty sandy lumber. Retains keen edge for long runs—gives perfect finishes.

OK No. 6—made of specially developed chrome steel to answer specifications of mills working in soft and green wood.

The **OHIO KNIFE** *Co.*

THE OHIO KNIFE CO., CINCINNATI 23, OHIO 10
Gentlemen: Please send me without obligation specific data on knives checked.
☐ HOG ☐ VENEER ☐ PLANER
COMPANY_____
NAME_____
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MAIL TODAY

Resistance to Grease and Salt Solutions

A MAJOR SALES ADVANTAGE OF

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WWP Finishing Section

Flame-Spraying Wood Surfaces

By Thomas A. Dickinson

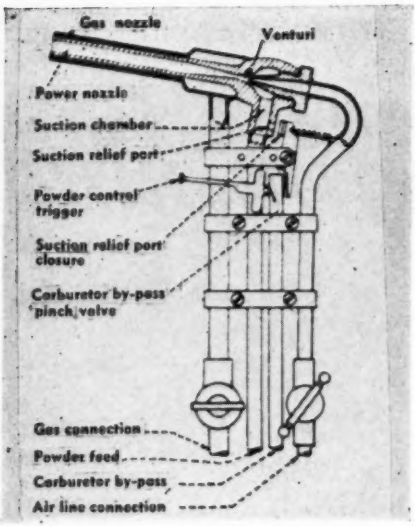
ALTHOUGH it was initially developed to permit the application of organic coating materials with extreme chemical inertness to the surfaces of metal products, the "flame-spraying" technique has been successfully used by Research Associates of Los Angeles to provide extremely durable and attractive finishes for wood surfaces.

Flame spraying is analogous to the process of atomizing molten alloys for metallizing purposes, since it involves the heat dispersion of thermoplastic particles for coating purposes. It differs from conventional organic spray-finishing techniques to the extent that the coating resins are heat softened for a desirable degree of applicational fluidity, so that no initial dispersion of the resins with solvents or "thinners" is required.

In addition to eliminating the need for special heat drying equipment or prolonged drying intervals, this reduces the cost of coating materials and facilitates the rapid buildup of thick "mar-proof" finishes for tabletops and other wood product surfaces without difficulties due to poor adhesion, alligatoring, blistering, etc.

Theoretically, all types of thermoplastic resins in powder form can be flame-sprayed as coating materials. However, the new process has thus far been utilized most advantageously in connection with Polythene or polymerized ethylene products of E. I. du Pont de Nemours & Co. at Wilmington, Del.

Polythene differs from other thermoplastic coating resins in terms of solvent resistance and ability to retain its most desirable physical properties in the presence of heat or bright sunlight and most of the corrosive acids or alkalies. Its specific gravity ranges from 0.92 to 0.93 while its flexural strength ranges from 1500 to 1700 p.s.i.



Component parts of a flame-spray gun.

and its hardness has an average value of 30 on the Rockwell R-scale. It is normally transparent or translucent, having a refractive index of 1.52_D, but can be pigmented for virtually all color effects.

Flame-spraying equipment is currently manufactured by American Agile Corporation at Cleveland, Ohio, and its development has been officially described by W. B. De Long and E. V. Peterson as follows:

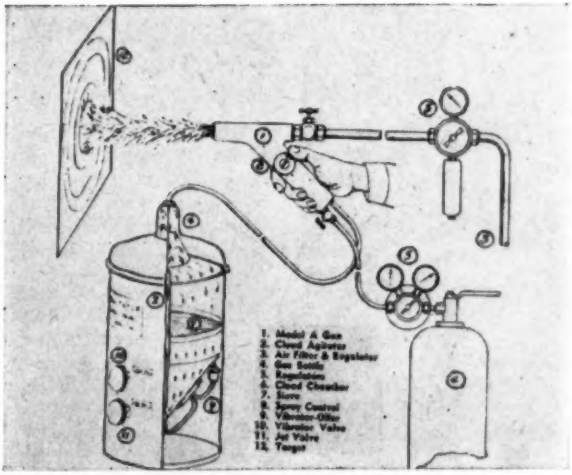
"Preparation of continuous coatings from powder obviously requires fusion in order (1) to 'wet' the target surface, and (2) to coalesce the particles into a continuous film. It is necessary, therefore, to adjust the conditions of heating to those required to raise the particles to their melting point, but not seriously beyond, and to maintain them at this temperature for sufficient time to permit coalescence.

"Early experimental work with flame-spraying guns designed for metal powders proved that the flame was too hot and short to secure melting without degradation. Experiments on heating polythene particles by dropping them through heated tubes indicated that the heating time necessary for melting at temperatures sufficiently low to avoid degradation was considerably more than could be obtained in projecting them from a gun in a flame or heated gas stream. Efforts toward devising a technique which would give a stream of completely melted particles were therefore abandoned and attention was given to the preheating of the particles in transit, followed by melting in place on the target surface.

"This was accomplished by using a spray gun in which the flame was relatively long and low in temperature, compared to those of conventional metal-spraying guns. It consists essentially of a venturi for drawing a mixture of polythene particles suspended in air into the gun, a tube for expelling the mixture from the gun, and a larger concentric tube for carrying the fuel gas. A flame that is lower in temperature and greater in length than those produced by most spray torches is obtained by mixing the fuel gas and combustion air beyond the torch nozzle, rather than by pre-mixing them. Both city gas and acetylene have been used satisfactorily."

Air for the venturi is supplied by a tube, shown on the far right in an accompanying diagram, while the air-powder mixture is provided by a separate line (second from the left in the diagram). A third line (first from the left in the diagram) maintains a flow of fuel gas through a concentric tube around the powder nozzle, whence the air-powder mixture is expelled.

Valves are provided on gas and air lines for regulating the volume of gas and for controlling the velocity of the



Major elements of a flame-spray setup are schematically illustrated.

air-powder mixture. A suction relief port and closure permit the on-off control of the powder flow, and the air powder mixture may be supplied by any means that will produce a cloud of thermoplastic particles in the atmosphere—such as a commercial carburetor type feeder, which requires only a small amount of air at low pressure.

When it is desirable to operate the gun without feeding powder, as for preheating purposes, the carburetor air supply may be by-passed through the soft rubber line. A pinch valve is used to close the by-pass and to build up pressure when a carburetor feeder is utilized. The latter action is accomplished by simultaneously moving the suction relief port closure and operating the control trigger.

The powder feed rate can be adjusted as necessary by regulating input air pressure for the carburetor, and the valve in the air line connection should be used only for the primary purpose of altering flame characteristics.

Use of the flame-coating technique has been retarded for the obvious reason that wood products may be seriously charred or ignited. However, Research Associates' efforts have revealed that little damage can be anticipated, even where unprotected wood surfaces are coated, if the spray gun is operated at a speed that is fast enough to prevent ignition; further, that the final possibility of heat damage can be eliminated by impregnating the wood with fireproofing impregnants.

A good fireproofing solution for priming wood parts prior to flame finishing comprises 17 parts sodium acetate, 3 parts disodium phosphate and 110 parts water. This can be applied as a generous coating with a standard paint-spray gun as well as by immersion, after which 24 hours of air drying or a comparatively short kiln drying interval should be allowed before further processing is done.

Wood surfaces should be cleaned and roughened by sanding prior to flame spraying, but require no pre-

Flame-spray coatings now appear to be most useful where durable, mar-proof surfaces are required. Store fixtures can easily be finished in this manner.

heating like metal products because they have no appreciable tendency to chill molten coating particles.

Generally speaking, a flame spray gun is handled much the same as a standard paint-spray gun during coating operations. Areas of about 2' x 3' dimensions are respectively covered by applying a series of overlapping strips, each of which is about 2" wide, at a torch traverse speed of 0.5 to 2 feet per second.

As soon as one pass has been made over an entire deposition area, a duplicate pass can be made over the same area, and the total number of passes in any circumstance is proportional to the required coating thickness. Flames which are 8 to 12 inches in length normally give best results, and the target or deposition surface should be about 2" from the tip of the flame.

Where coatings of 0.040" thickness are required, flame finishing can be done at a rate of about 16 square feet per hour. Other thicknesses and areas are proportionally smaller or larger, and may be readily computed for the accurate control of production operations.

Quite frequently, flame-coated particles appear to be unmelted at the time they strike a deposition surface. However, these particles will quickly melt down and lose their identity if work is properly done.

Where areas of less than 4 square feet must be finished, it is usually a good idea to pause between passes so that particles will have plenty of time to fuse and cool without overheating wood surfaces.

After a coating is built up to a desired thickness, sprayed materials may be polished or glazed by passing the gun over the coated surfaces the same as in previous passes, but with the powder supply turned off. However, where adjacent areas must still be coated, no glazing should be done for a distance of about three inches from the edge of the coated area, since smooth overall coatings might otherwise be very difficult to apply.

When coatings are improperly applied, or when coatings are damaged by rough treatment after they are applied, repairs can be made by stripping flame-sprayed materials from the damaged areas and applying fresh materials. Stripping can be done by cutting through the coating around damaged areas and using a chisel or similar tool to break the wood-plastic coating bond, after which exposed wood surfaces should be resanded before they are recoated.

Exposure tests have indicated that flame-sprayed polyethylene resins may have essentially as much chemical inertness as molded or extruded plastics of the same resinous composition. For example, in tests made with flame-

A carpenter, asked to repair a floor, arrived with a board 3 feet by 8 feet. But the hole was 2 feet by 12 feet. Puzzled for only a moment, he soon began to saw.

How did he cut the board to fit the hole?

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If you give up on the puzzle illustrated above, you will find the answer on page 178.

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coated test strips as required by A.S. T.M. D-543-43, the following exposures and results were recorded for periods of seven days at 25° C.:

Reagent	Conc. Wt., %	Wt. Increase, %	Dimensional Increase, %	Appearance
Sulfuric Acid	30	0.3	None	No Change
Sulfuric Acid	3	0.04	"	"
Nitric Acid	10	0.06	"	"
Hydrochloric Acid	10	—0.01	"	"
Acetic Acid	5	0.3	"	"
Oleic Acid	—	1.0	0.4	"
Sodium Hydroxide	10	0.1	None	"
Sodium Hydroxide	1	—0.01	"	"
Ammonium Hydroxide	10	0.2	"	"
Ethyl Alcohol	95	0.4	"	"
Ethyl Alcohol	50	0.2	"	"
Acetone	—	2.0	0.4	"
Ethyl Acetate	—	7.0	0.9	"
Ethylene Dichloride	—	15.0	2.0	"
Carbon Tetrachloride	—	69.0	7.0	"
Toluene	—	29.0	5.0	"

More severe exposures and results included:

Reagent	Conc. Wt., %	Temp. Deg. F.	Months Exposed	Appearance
Hydrochloric Acid	37	70	13	No Change
Hydrochloric Acid	37	140	9	"
Hydrochloric Acid	10	70	13	"
Sulfuric Acid	95.5	70	13	"
Sulfuric Acid	40	140	8	"
Sulfuric Acid	10	70	13	"
Nitric Acid	65	70	1	Failure
Nitric Acid	10	70	13	No Change
Hydrofluoric Acid	35	70	13	"
Acetic Acid	99.5	70	13	"
Acetic Acid	99.5	70	7	Failure
Acetic Acid	99.5	140	1	"
Acetic Acid	10	70	13	No Change
Formic Acid	90	70	13	"
Formic Acid	90	140	9	"
Ferric Chloride	10	70	13	"
Ferric Chloride	10	140	9	"
Sodium Hydroxide	70	70	13	"
Sodium Chloride	Sat'd	70	13	"
Formaldehyde	37	70	13	"
Weather	—	—	8	"

At this writing, polyethylene and the flame-spraying technique have been used only for coating purposes in connection with wood products—particularly where other coatings would have been inadequate. However, since flame-

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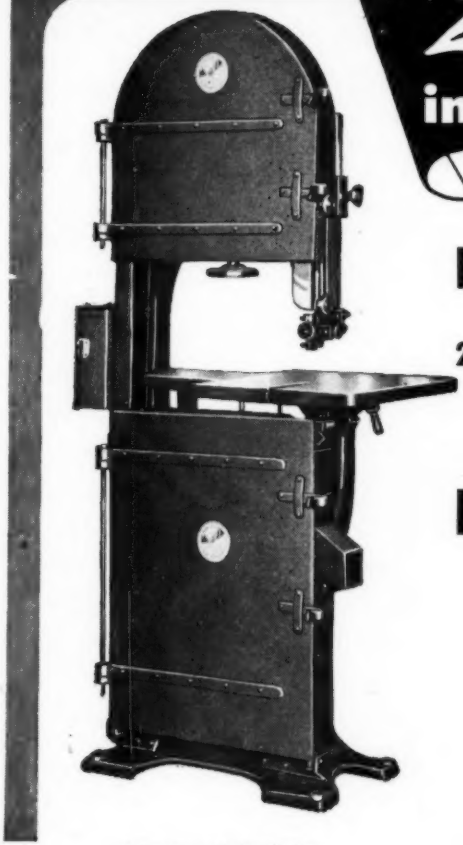
in every detail



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sprayed polyethylene can be fused with heat and pressure, the same as standard thermoplastic adhesives, it is entirely possible that flame-sprayed coatings will eventually be used for laminating purposes—for example, to build up wood veneers into plywood moldings which require considerable chemical inertness.

The End

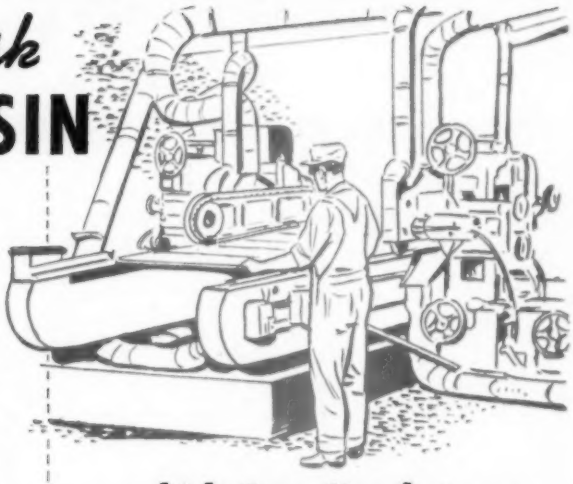
OAK, WALNUT, AND MAHOGANY

To obtain a limed-oak finish, the wood is carefully selected and then bleached. It is wash coated to retain as light a tone as possible and then filled with white filler. Sealer is applied and followed by top coats. Some people prefer to use a white lacquer enamel, well-thinned-down, for the wash coating; especially if the wood tends to be rather dark. Only enough is applied to give a whitish cast—too heavy an application will obscure the grain. After sanding, the wood is filled and finished. This method does not produce the clear, clean tone resulting from the use of white filler over very light wood. The sealer and the top coats should be of colorless, water-white types.

To produce limed or frosted walnut, some finishers prefer to bleach the wood first according to the color effect desired. The wood is wash coated with a thin white lacquer or a clear material. It is sanded and then a white filler is applied followed by the usual top coats.

A toasted mahogany finish requires the use of a bleached wood or a very light veneer. The surface is wash coated with a clear material having a 5% to 10% solid content. Sometimes a small amount of light brown, non-grain raising stain is added to the wash coat to give the finish a rich light undertone. A very light brown filler is used, followed by the sealer and other top coats. On low priced merchandise, ordinary veneer, wash coated with a very thin white lacquer enamel is used.

"Let's ask WISCONSIN



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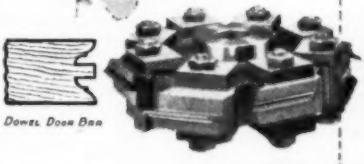
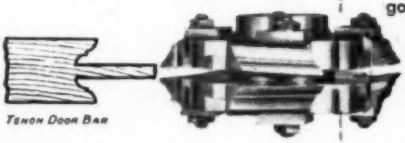
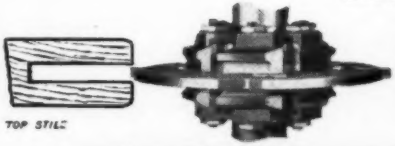


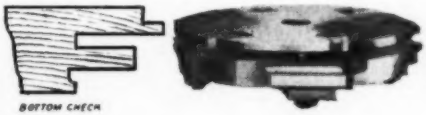
DOWEL DOOR BAR



TENON DOOR BAR



TOP STILE



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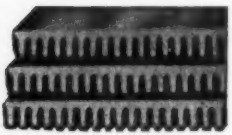
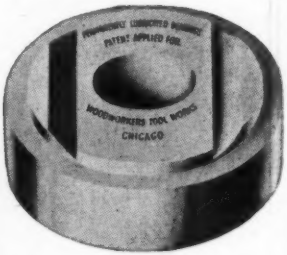
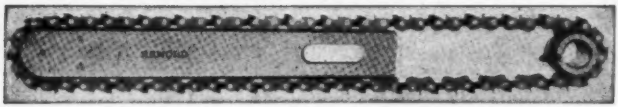


Knourek Patent Ball Bearing Shaper Collars for use with plain beveled edge shaper steel or Lock Edge Shaper Steel. Ask for circular covering Knourek Ball Bearing Shaper Collars and Schmidt Lock Edge Collars. This combination prevents accidents on shaper and knives cannot become loose and fly out of collars.





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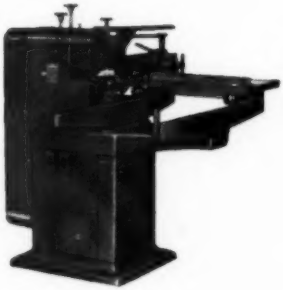

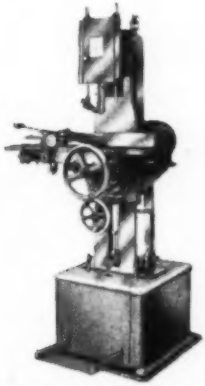

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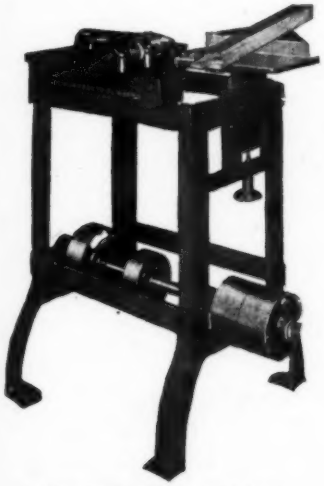

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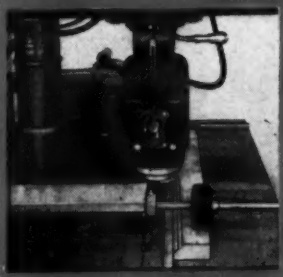

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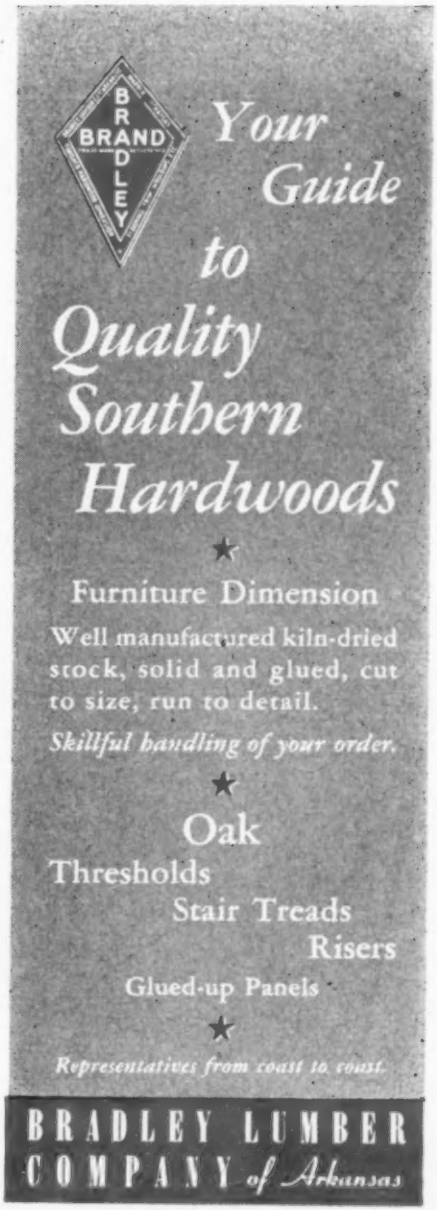
Whitman & Barnes, 40600 Plymouth Rd., Plymouth, Mich.

MERSHON 46-C BAND RESAW

The Mershon No. 46-C band resaw is described in Folder 318. Front and rear views, showing belt driven machine, are pictured. The machine can be furnished with motor and vee belt drive. Specifications are also given.

W. B. Mershon Corp., Boston 27, Mass.



Veneer, Plywood and Laminated Wood Section.....

Features

- Veneer and Plywood
- Plastic Bonded Plywood
- The Veneer Container Industry

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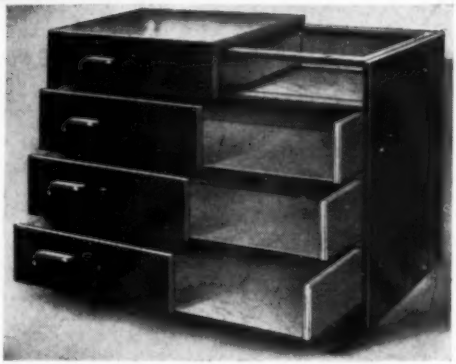

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Veneer and PLYWOOD

by Ned Bailey

THE FIRST of a series of articles to be published from time to time about these two indispensable wood products.

AS WE all know veneer and plywood have been used by wood craftsmen throughout the ages. The grandparents of the wife of Tutankhamen had a bedstead, the head piece of which, made on the plywood principle, was veneered with Laburnum wood and inlaid with gold and jewels. Old as it was when discovered, it was still in fair condition which speaks well for the adhesives and the craftsmen of that time.

Down through the ages come veneer and plywood, mixed up in history, romance, war and skulduggery. It may not be generally known, but the Japanese have been able to cut wood veneer by hand in such a manner that, although it is almost transparently thin, it has sufficient substance to be printed or painted on. It would seem that all mankind, sooner or later, learned how to make veneer and plywood, so we are not dealing with an entirely new product.

The old saying about not seeing the forest for the trees also applies to veneer and plywood. Few of us realize how generally these products are used. It doesn't make much difference where we are or what we are doing—one or the other is in evidence. More and more are these forms of wood finding favor with manufacturers of many and varied products. To a large extent wars have stimulated the developments in the use of veneer and plywood, followed by postwar periods of intensive study, experiment and research that have brought us new adhesives, machinery and methods. Today we do things with veneer and plywood that were not even thought of a couple of decades ago.

WOOD WORKING DIGEST has published much informative material during the years about veneer and plywood. Our special section on these products has included articles which have been reprinted by the thousand and distributed all over the world. Our interest in the dissemination of information has been spurred by an ever growing flow of request for additional data of a practical nature on the production and use of veneer and plywood. This series of articles is the answer to these requests. We expect to

publish the series in successive monthly issues and suggest our subscribers keep a file of them available so they can refer back to some past issue when necessary.

Because the end of this series may be many months away we are going to begin a glossary of terms in this first issue so you will know what we are talking about. This will be followed by an "Origin of Species" listing. Next a table of suggested uses. From then on production methods, materials, machinery and equipment will be described.

Glossary of Trade Terms

Adhesive: a substance such as animal, casein or resinous glue, used to make materials (in this case veneers) adhere to one another.

Aging: time needed for plywood, after the initial adhesive grip, until the maximum strength of the joint is developed.

Air-dry: when the moisture content is approximately the same as moisture content of the surrounding air.

Albumin: soluble dried blood as used in adhesives.

All-veneer: plywood without a lumber core.

Animal Glue: derived from bone and hide waste, usually by cooking.

Assembly: collecting and placing in order layers of veneer, lumber, and other materials with adhesive, preparatory to pressing into plywood.

Back: the unexposed or opposite surface to the face or the exposed side of a sheet of plywood.

Balanced: plywood having odd number of plies, symmetrical on both sides of center line, and with an equal amount of wood in each grain direction.

Bale: bundle of freshly glued plywood held together with clamp irons after removal from cold press.

Banding: a strip of wood, usually selected to match the face veneer, that extends around one or more sides of a lumber or all-veneer core with its grain usually extending the long way. Banding will facilitate shaping edges or can be finished flat to conceal core or cross bands.

Bark: the rough skin or natural exterior of a tree.

Blemish: minor defect.

Bird's eye: caused by local sharp depressions in annual rings, accompanied by considerable fibre distortions, once formed, succeeding growth rings follow the same contour for many years. In plain-sawn and rotary cut veneer, these depressions cut crosswise show circlets slightly resembling a bird's eye.

Blister: in plywood, either due to adhesive not sticking or adhering properly or to an entire lack of adhesive at that point, or not enough pressure. In the case of hot-pressing a pocket of steam may develop causing a bulge or blister.

Blister Figure: a small knoll-like elevation in the wood due to an uneven contour of the annual rings, not blisters in the wood.

Block: the section of the log, usually 4′ to 10′ long, from which veneers are cut on a rotary lathe.

Blue-stain: a form of sap stain producing a bluish discoloration usually confined to the sapwood, caused by a fungus growth.

Bole: the trunk of the tree.

Bond: grip of adhesive on the wood at the line of application, particularly with heat-reactive resins.

Brashness: wood with low resistance to shock or a condition characterized by an abrupt failure across the grain without splintering.

Broken Stripe: changes in angles of the fibres caused by undulations in annual growth rings of tree.

Bundle: see bale.

Burl: a figure produced by cutting

Pictured First Page This Section
This office, Stone Lumber Co., New Orleans, measures 20'x20', and each of the walls utilizes a different plywood. One wall is in quarter-sliced combination grain white oak; a second wall is in ribbon striped Philippine mahogany, a third wall in vertical grain cedar, and the fourth wall in walnut and bird's eye maple in squares. The ceiling is divided into four sections, separated by walnut stripping. Weldtex plywood is used in one square, Weldtex plywood alternated with squares of smooth gum in another, and in a third Weldtex in variegated design. The fourth section is a square block of plain birch and a square block of curly birch alternating.

through the wart-like protuberances on trees, containing the dark pith centers of a large number of undeveloped buds.

Butt: the lowest portion of the stem of a tree, the butt end.

Cat eyes: small pin knots less than ¼" in diameter.

Catalyst: a resin adhesive hardener. A reagent that speeds up chemical reaction, with or without heat. It accelerates setting or hardening of resinous adhesives.

Caul: aluminum sheet for hot pressing, about 1/16" thick and the size of the hot press platens; or plywood sheet for cold pressing with conventional glues, usually ¼ to ⅜" thick and waxed on the faces to avoid adhesion.

Chain Figure: short crossmarkings of similar appearance, suggesting slightly the cross links of a chain.

Checks: small splits, paralleling the grain, usually produced in seasoning.

Clamps: the "I" beams or double channel irons together with the right and left clamp screws or turnbuckle rods which hold the bale of plywood under pressure after cold gluing.

Clipper: the cutting or shearing machine used to dimension dry or green veneer to width.

Compressed-impregnated wood: usually refers to layers of veneer impregnated with a liquid resin, assembled and bonded under high pressure.

Conveyor: the equipment usually composed of a series of belts, rollers or chains on which material is transported from one place to another.

Cooking vat: a tank or pit of steam heated water in which the blocks or flitches are cooked prior to cutting by lathes or slicers.

Core: the center layer of plywood, can be either sawn lumber or veneer. Also the remaining part of a log too small to cut into veneer.

Crossbanding: veneer in plywood with five or more plys. In standard 5-ply construction it is the second layer on either side of the center and they are laid transversely counteracting splitting, shrinking or swelling.

Cross Figure: wood fibres of a tree is so distorted that when cut in a radial direction figures and highlights similar to a corrugated surface are produced.

Cross-grained: when the width of a sheet of plywood is greater than its length.

Crotch: that part of the tree, usually the crotch or fork of large branches from which "curl" veneers are cut.

Dead Piled: plywood, fresh from the hot press or clamps, piled solid and weighted down on a flat base and without stickers so it will become normal as to heat and moisture.

Defect: an imperfection or fault in veneer or finished panel that reduces

its strength, durability, beauty or utility value.

Defect (open): checks, cracks, loose knots, open joints, splits, worm holes or other defects which break up the smooth continuity of the plywood surface.

Doors, plywood: panel type where stile and rail frame work are thicker than the central panels. Slab or flush type are of uniform thickness and flat surfaces, cores can be either solid, hollow or of edge and end glued lumber.

Doze: decay that is characterized by dull, lifeless appearance accompanied by lack of strength and softening of the wood substance.

Dryer: the chamber or kiln through which veneer sheets are passed to remove excess moisture.

FORMICA PRESENTS NEW LUXWOOD LINE

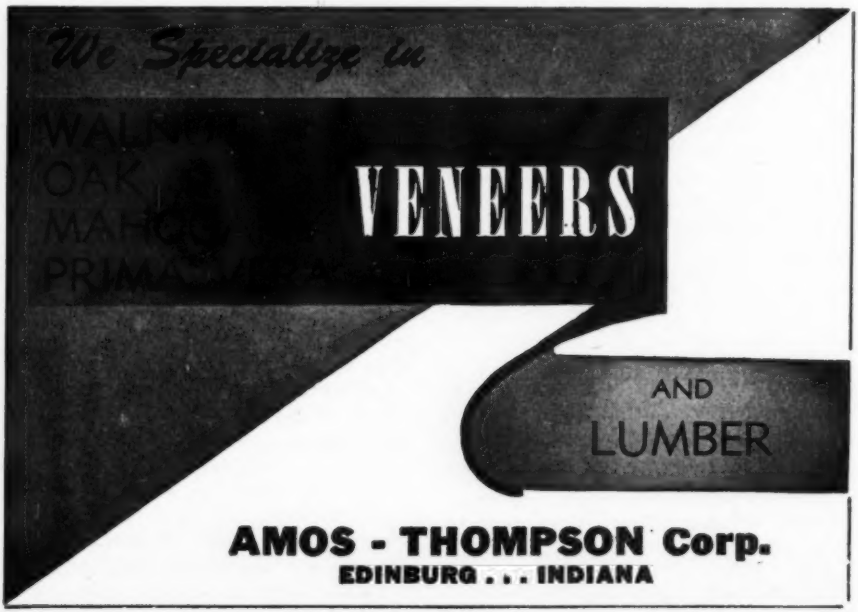
"Luxwood," available in five finishes and offering many special advantages in the field of furniture manufacture, is the latest addition to the line of decorative plastic laminates made by The Formica Co., Cincinnati.

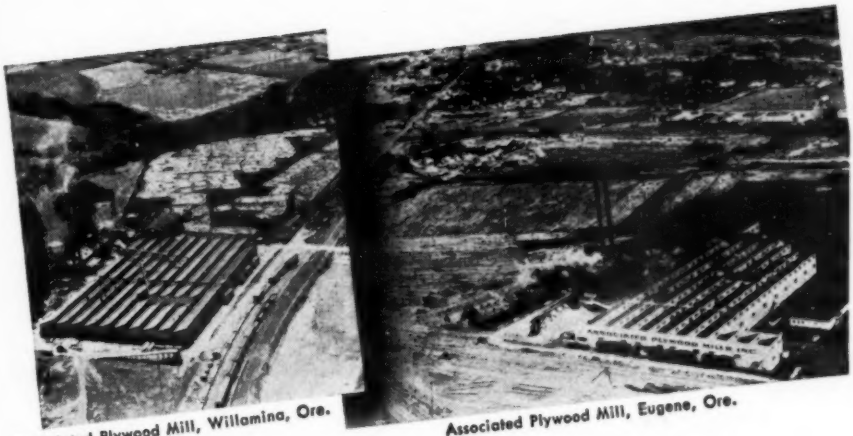
The new line is claimed to be the most authentic photographic reproduction of natural wood grain ever offered in decorative material of this type. Also cited is the consistent coloration, seen as a valuable aid to proper matching.

The five "Luxwood" finishes include mahogany, grey and three shades of blonde.

Fabricating techniques for "Luxwood" are identical with those approved by the factory for its widely known patterned material. "Luxwood" is available in the cigarette-proof grade and in both satin and polished finishes. It is priced the same as standard Formica patterned decorative sheets.

Samples are available without charge on request to The Formica Co., 4633 Spring Grove Ave., Cincinnati 32, Ohio.





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PLASTIC BONDED PLYWOOD

for cold storage doors

BY J. V. JAMISON III

DEVELOPMENTS in thermosetting plastic adhesives and marine quality plywood have made possible the production of a new kind of plywood cold storage door.

Although plastic bonded plywood has been used by the army and navy for such heavy duty applications as ship bottoms, bottoms on landing barges, cargo carriers and storage bins, this is the first time marine quality bonded plywood has been used for cold storage door construction.

Heretofore plywood for cold storage doors has been used chiefly as exterior paneling to produce an attractive, smooth appearance over a basic construction of reinforced tongue-and-groove. Problems encountered included moisture penetration at the seams and peeling of the plywood. These problems have been eliminated with the new-type plywood door, where marine quality plywood forms the basic construction of the door.

Since plywood is a built-up board of laminated veneers in which the grain of each piece is at right angles to the one adjacent to it, its construction takes advantage of the physical properties of the wood. The strength of the wood is along the grain, in the longitudinal direction. In this axis, also, there is no expansion or contraction. In wood there is no cleavage plane across the grain, and wood will not split. By placing plies at right angles to each other, the desirable physical properties of the longitudinal grain, and of the crosswise grain are obtained in both directions.

Although plywood has the physical properties to produce a strong, non-shrinking, non-splitting panel, it has been used for many years only as veneer because its natural physical properties were superior to the bonding agent. Now, with plastic resin bonding, the joints are as strong or stronger than the wood itself. The phenolic resin adhesives that are now used are pressed and completely set within a few minutes by means of large hot-plate presses. The pressure and heat changes the phenolic resin adhesive into an insoluble plastic, and welds the cross-laminated wood sheets into rigid panel units, suitable for permanent exposure to moisture or to temperature changes. The adhesive stands up under a cold-soaking test, a boiling test, and a fire

test. If delamination occurs under the rigid test conditions set up by the National Bureau of Standards, the plywood is rejected for use. To get greatest strength, the user should be sure that all plies throughout are top quality Grade A heartwood, free from defects. All plastic bonded plywood on the market for marine use—and this is the quality from which Jamison "50" cooler and freezer doors of Monopanel construction are made—has passed these and other tests for quality and can be depended upon to perform satisfactorily under any temperature and moisture conditions.

When used on cold storage doors, plastic bonded marine plywood provides these advantages:

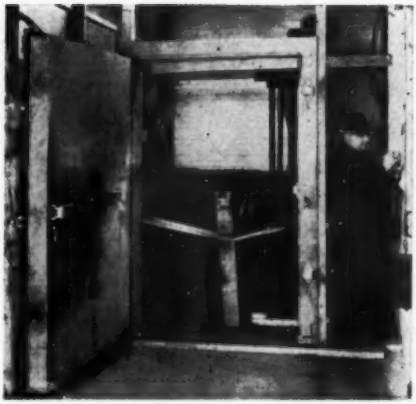
1. Greater rigidity and greater strength than ordinary wood, because the cross lamination distributes the strength in both directions. Consequently, freedom from warping results.

2. The bonding resin is not affected by moisture or temperature.

3. An effective barrier when the back of the panel on the warm side is coated with asphalt. Although the bond is completely water insoluble, the wood itself must be protected by a vapor-resistant coating. According to the Douglas Fir Plywood Association, asphalt is a very effective coating. The Association reports that published data on vapor loss are not available, but experience of plywood, plastic, and pulpboard manufacturers with vapor barriers indicates that the vapor loss of these materials should not exceed from 0.60 to about 1.00 grains per sq. ft. per hr. under a pressure of 18.45 mm. of mercury. Plywood, made of ¼" Douglas fir, with two coats of asphalt paint, loses only 0.308 grains per sq. ft. per hr. under a mercury pressure of 18.45 mm. Asphalt has been found to cut the vapor loss 90%, and provides the most effective barrier so far known.

4. Sanitation. The bonding material does not support bacteria or fungi, and the face of the door, being a continuous plywood sheet, is smooth and easy to clean.

5. Full insulation. Unbroken insulation across the face of the door is made possible by the rigid door structure that does not require any internal



The ability of plastic bonded plywood to withstand hard usage is shown by this model being given a life test at the plant of the Jamison Cold Storage Door Co. When the picture was taken, it had been opened and banged shut 1½ million times, without showing appreciable wear.

STRENGTH AND RIGIDITY OF FRAME WALLS
(From U.S. Forest Products Laboratory Tests, Wall With Openings)

Sheathing Material	Relative Rigidity	Relative Strength
1 x 8" diagonal sheathing	1.0	1.3
29/32" fiberboard (8d nails, spaced 3" at all vertical edges, 5½" to 6" elsewhere)	1.6	2.1
horizontal sheathing (1 x 8' sheathing; 1 x 4" let in braces; 8d nails, 2 per stud crossing)	1.5	2.2
¼" plywood nailed (6d nails, spaced 5" at edges, 10" elsewhere)	2.0	2.8
¼"plywood glued to frame	3.7	4.0

bracing and permits the space to be entirely filled with insulating material.

In taking the plastic bonded plywood door out of the "custom-built" class, and in making it generally available for the first time for cooler and freezer doors, the Jamison Cold Storage Door Company has incorporated certain other special features which, it is believed, will provide added serviceability and prolong the life of the door.

The constant use of a cold storage door has always presented certain maintenance problems, due to wearing out of the gasket, or to injury caused by sudden, sharp shocks and trucking abuses. One of the things for which builders and architects look is the ability of a refrigeration door to stand up under constant banging. The Monopanel construction of the Jamison "50" door provides a strength and rigidity from three to four times greater than present plywood construction, and far greater than solid wood horizontal or vertical construction. The following table, based on tests from the U. S. Forest Products Laboratory, gives the rigidity and strength of various types of frame wall materials. The table shows that ¼" plywood sheathing provides nearly four times more rigidity and strength than ordinary diagonal sheathing.

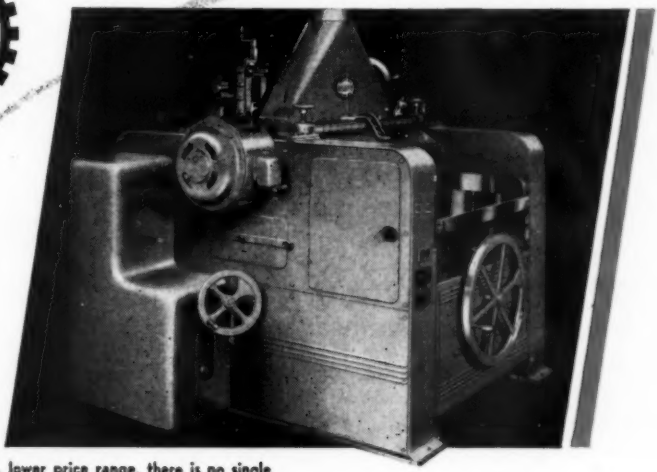
For still greater strength, the Jamison plywood door is constructed with ⅜" plywood on the front, and ⅝" plywood on the back.

In addition to providing greater strength and rigidity, the Jamison "50" cooler and freezer door has two patented features, the E-Z open (2-point) fastener and the Adjustoflex hinges. These features provide automatic and uniform spring pressure on the specially designed Lo-Temp gasket and this pressure forces the gasket into the space between the sides of the door and the edge of the casing. A plug seal is thus established. The hinge spring pressure and the spring pressure of the fastener are both manually adjustable. As the gasket wears, the seal can be maintained with its original all-round tightness simply by adjusting the fastener spring to provide the desired compression. Maintenance costs incurred by replacement of the gaskets are minimized because the seal is held even when the gasket is worn. Further, the design of the fastener strike surfaces and their impact relation to the keeper roller assure ease of operation and elimination of shock to both keeper assembly and strike. These exclusive design features tend to overcome some of the difficulties encountered in frequent opening and shutting of the door. Tests made at the Jamison plant show doors to be in good condition after being opened and shut as many as 1½ million times.

The End

Instantaneous Controls

"PLUS" FEATURES THAT ADD TO THE GREAT SUPERIORITY OF THE BUSS 4L PLANER



In the medium size, lower price range, there is no single surface planer that comes close to equalling the BUSS 4L as a fast, precision producer.

With the BUSS patented Instantaneous Pressure Bar Control, the patented Instantaneous Lower Roll Control, and Variable Feed — selection of any desired feed from 23' to 69' per minute, the operator can completely set this machine for any type of work in just a minute or two. This saves plenty of time in switching from first cutting to finished planing, and from job to job — and the exact rate of feed, roll, and bar setting, for maximum production and finest work is always available.

Built to provide many years of perfect service and incorporating dozens of construction superiorities found only in BUSS planers, you'll find the 4L a sound investment in planers of 24" to 30" capacity. For complete description write for Bulletin No. 54, NOW.

The complete BUSS line contains the ideal planer for every production set-up — ranging from the small No. 208 (capacity 20" x 8") to the large single and double surface planers and the No. 55 for surfacing rough lumber. Bulletins on request.

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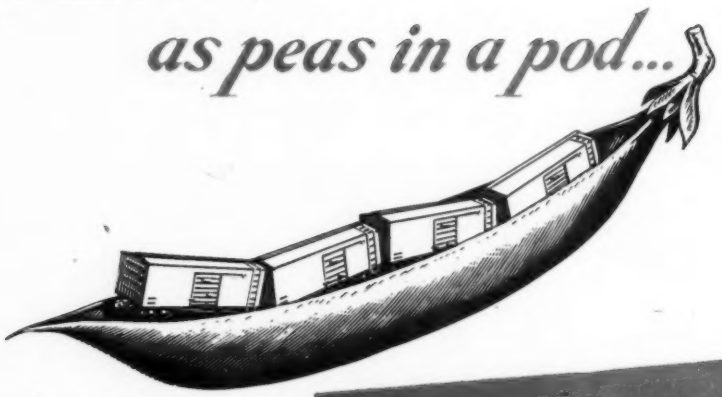
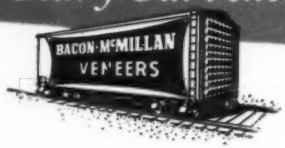


every car of **Bacon-McMillan** *Rotary Cut Veneers*



Standard Operating Procedure at Bacon-McMillan builds a plus into gum and bay poplar veneers that assures a constant high standard of quality. From selection of logs to shipping platform there's a rigid check-list allowing no compromise. It has to be the best to earn an okay.

Two Mills Guarantee Uninterrupted Production. Bacon-McMillan also operates the Danner Veneer Mill in Mobile, Ala. This dual operation means you will never be disappointed on delivery dates when you order from Bacon McMillan.

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QUALITY VENEERS SINCE 1910 STOCKTON, ALABAMA

THE VENEER CONTAINER INDUSTRY

its history, products and future

By C. S. Walters

We are publishing the report here to give an idea of some of the helpful work being done by state universities and also to bring some interesting facts to our readers engaged in similar manufacture.

Most of this report is based upon mid-western plants, but we believe the generalizations apply to the entire industry.

THE VENEER container industry converts standing trees or parts of them into baskets, boxes, crates and other similar products. This study of the industry was made by the Illinois Agriculture Experiment Station and is available in booklet form from the University of Illinois.

This study was made in order to determine the present status of the industry, its methods of operation and its future possibilities. The primary objects were to determine (1) present operations and efficiency of the industry; (2) importance of the industry economically (3) the relation of its annual requirements to the present and future timber supplies; and (4) the possibilities for its expansion when supplies of suitable raw materials, markets, and labor are considered.

At first growers of fruits and vegetables generally used boxes and barrels of thin lumber for shipping fruits and vegetables. The containers were handmade and laborers were often paid 75 cents for assembling 1,000 boxes or 50 cents for one hundred 24 - quart berry crates. But we find now that men, machinery and materials have changed this picture.

Specifications

Manufacturers prefer the soft hardwoods for container veneer. Sweet gum is probably the favorite species, followed by yellow poplar. Both are highly desirable woods for container veneer. According to E. T. Woodworth, Fruit Growers Package Company, the company used yellow poplar exclusively during the first few years it operated. The sapwood was peeled from the bolts and either burned or discarded, and only the heartwood was used to make veneer for fruit and vegetable packages. At present the industry as a whole uses a larger volume of cottonwood and sycamore because these woods are more abundant than the sweet gum or yellow poplar.

Some of the veneer container manufacturers cut oak for use as bands on baskets and lids, although most of the oak and other species of hard hardwoods which grow to saw-log size are

These cottonwood logs are being cut into bolts by a dragsaw. Most of the veneer container manufacturers prefer this type of saw.

cut into lumber. Other companies will not buy oak but will use pecan. All the manufacturers dislike beech, but some of them will accept a few logs of good quality.

The Doyle Rule is used for buying logs by most companies. When standing timber is purchased from private owners on a log-scale basis, the Doyle Rule is used. Timber sales from national forests are made on the basis of the Scribner Decimal C Rule and from state forests on the Doyle Rule.

Since most companies do not have a written set of log rules, the buyers have to depend on their past experience and their knowledge of what, in general, is wanted. Log producers or logging crews also use their marketing experience as a guide in supplying the demands of the companies.

Veneer manufacturers want logs that are as free as possible from knots, shakes, rot, sweep, and other blemishes which may reduce the yield of clear, quality veneer. The buyers are more lenient as to species, however, often accepting those not listed in first-grade specifications. They will also accept a few logs shorter than 10 feet or smaller than 14 inches, diameter inside bark, at the small end (some companies will buy an occasional log as small as 12 inches d. i. b.).

Companies operating sawmills along with their veneer mills can use a woods-run grade of logs. Generally the log producers sell their "number 1" logs to the veneer mills and the "number 2" logs to sawmills.

Manufacturing Processes

Raw material is usually delivered in log form; a few bolts are also occasionally delivered. Still other companies buy their raw material in the form of veneer.

The logs are cut into bolts and bolt lengths range from about 18 to 65 inches, depending upon what product is to be manufactured from the veneer. For example, bolts for quart-berry-box veneer may range from 43 to 46 inches, pint-box bolts from 34 to 38 inches, and bushel-basket bolts from 40 to 63 inches. Egg-case bolts are cut 30 inches long and are equalized or end-trimmed

A power chain saw is being used to cut sycamore logs into bolts. Logs are small but of good quality.

These cottonwood and sycamore veneer bolts, which are to be made into fruit baskets, are ready for steaming.

to 26 inches. A variety of lengths may be cut from the same log in order to utilize it efficiently and economically. Lengths may vary with the species, since one wood may be easily bent and, therefore, is more desirable for rim or band stock than for some other use.

Heating bolts

Some bolts are heated to soften the wood so that it may be debarked and cut easily. Bolts to be cut into thick veneer—stock for egg cases and some types of boxes—are not heated during the summer but are veneered while green. Some companies do not heat short bolts. Most companies do not heat such wood as gum and yellow poplar because they do not need softening.

Bolts may be heated by hot water or by steam. A few firms do not heat their bolts before veneering them. The bolts are rolled to the hot water vats or steam chests by hand.

There appears to be no standard schedule among the operators for length of heating time or temperature of the water bath for various species. The bolts are generally heated 12 to 24 hours, and usually the heating vats do not have thermostatic controls. Water temperatures vary with the season and company but were approximately 160° F. when the plants were visited in early spring.

Left: A hackberry bolt is being hoisted from the hot water vat after soaking 24 hours. Right: A sycamore bolt is being removed from a steam chest. Hot water or steam heats the wood and softens it for cutting into veneer.

A back roller is attached to this veneer lathe, so that berry-box parts are cut from the bolt in a single operation. In the background a bolt is ready for hoisting into position on the lathe as soon as needed.

Bolts are taken out of the hot water vats by mechanical hoists and are debarked by hand. Both the head and blade of a poleax (single-bitted) are used to remove the bark from the bolt. The bark is often salvaged and burned for fuel. It is generally taken to the boiler or waste pile by hand methods, although a few companies have mechanical conveyor systems for transporting the bark and other waste to the boilers.

Cutting bolts into veneer

A mechanical hoist can be used to lift the debarked bolts, but some companies roll the bolts to the lathes by hand. All veneer produced by the industry (as studied in Illinois) is rotary-cut. The bolts are lifted by a power hoist or block and tackle, centered in the lathe, and turned against a knife which peels a thin sheet of wood from the revolving bolt. Lathe attachments also trim the edges of the veneer and sometimes score it for folding. When a bolt is cut down to a cylindrical core about 6 inches in diameter, it is removed from the lathe. The cores are either burned for fuel, sold for pulpwood, cut into dimensional stock for box cleats or for ends and centers of egg cases, or manufactured into novelties.

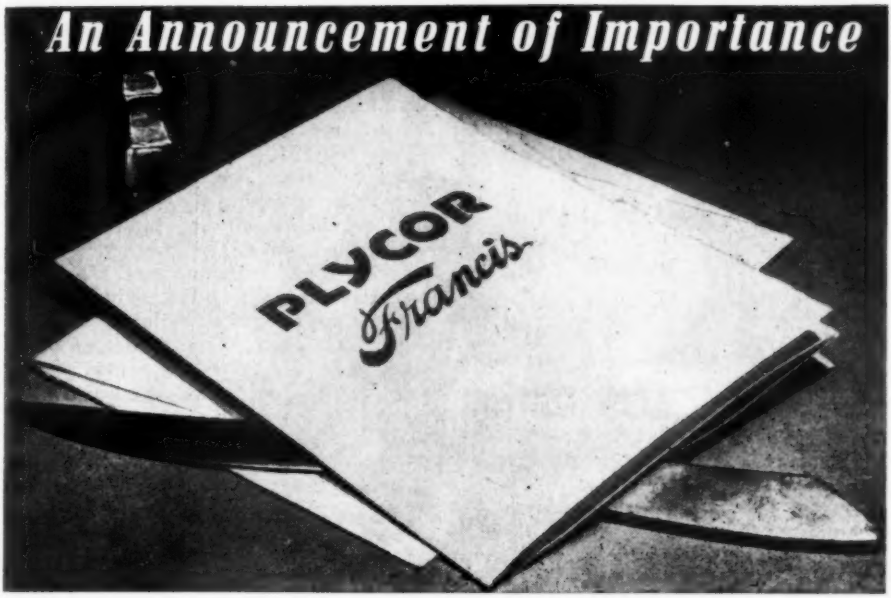
In most of the plants the long sheet of veneer is cut to size by a clipper. A few companies at times use a back roller attachment on the lathe which scores the bolt so that various container components are cut to size during the veneering operation.

Grading container parts

The fruit- and vegetable-container parts are carried from the lathe or clipper to the grading tables by hand or on hand-operated carts. Women usually do the grading, since they have nimble fingers and the faculty for quickly sorting out and removing the defective pieces. Culled stock is generally hauled by hand methods to the boiler room, and usable stock is stacked in proper order for the machine operators. If the pieces have been previously scored, they are partially bent along the scored line before being sent to the stapling machines.

Egg-case veneer is drying in outdoor racks after being assembled.

An Announcement of Importance



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* * *

*States of Washington and Oregon excluded.

In order to provide more efficient service to users of glue room equipment, two of the best known names in the woodworking industry announce a new marketing arrangement.

Effective June 15th, 1950, the products of Chas. E. Francis Co., of Huntington, Indiana, will be sold exclusively throughout the world by Plycor Company of Chicago.*

Chas. E. Francis Co. have, for 70 years, manufactured their well known line of Hydraulic Cold Presses, Hydraulic Precision Veneer Jointer-Cutters, Glue Spreaders, Glue Mixers, and Retaining Clamps. These, added to the Plycor line, enable us to offer every needed size and type of the most modern and efficient glue room equipment to meet any requirement. In addition, the Plycor line includes complete equipment for the production of various types of hardboard.

The two lines, Plycor and Francis, will continue to be manufactured independent of each other but sales of both will be integrated in one organization administered through the Plycor Chicago office and its branches and sales representatives.

Full information regarding any of this equipment will be supplied upon request.

PLYCOR COMPANY

Division of

EARLE HART WOODWORKING MACHINE CO.

565 W. Washington Blvd. Chicago, Illinois

Strips of veneer are being woven into webs for bushel baskets. A single metal fastener at the center holds the strips together.

Drying, assembly and preparation for shipment

Thick veneer for egg cases and for wire-bound boxes is hauled from the graders to outdoor racks for air-drying. Thin veneer is sometimes stacked for drying and sometimes dried in steam-heated mechanical dryers after being assembled.

Since the veneer is generally used soon after it has been cut or is air dried, it is not treated to prevent the growth of molds or stain fungi. If, however, there is a delay of two or three days between the cutting and assembling operations, various molds and stain fungi do develop and grow luxuriantly on the moist wood. These harm only the appearance of the wood, and may be removed by brushing.

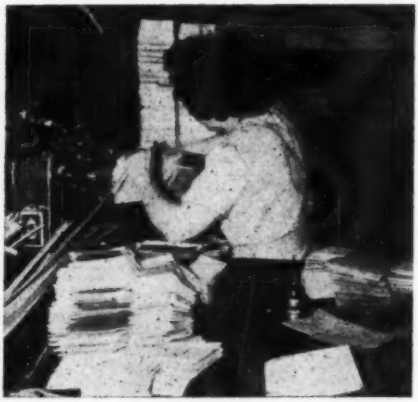
Pre-assembly operations are necessary for some types of containers. The components of some types of fruit packages are usually woven into webs or mats before they are formed and stapled by machine.

Various types of machines are used to assemble the veneer into containers. Nailing machines or those driving corrugated fasteners assemble the various parts of boxes, crates, or egg cases. Box and basket machines mold the webs to form and attach the rims with wire staples. Handle machines attach the wire handles to bushel baskets, and the "down loopers" attach the wire clips which secure the lid after the basket has been filled. A special machine is needed for attaching the wire to veneer that will be used in the manufacture of wire-bound meat and poultry boxes.

Some types of containers may be assembled before shipping, while others are shipped knocked-down. Berry boxes, for example, are shipped assembled - usually 500 in a fiberboard box; and bushel baskets are generally nested in one-dozen lots. Wire-bound meat and poultry boxes, on the other hand, are shipped knocked-down. Egg case ends and centers are baled in lots of 25, while the pieces of veneer for the sides and bottoms are baled in lots of 50. Crates of various types are often shipped knocked-down and are assembled by the customer.

Products and Sales

About 80% of the veneer cut by the



A berry-box machine molds the veneer to shape and staples the rims. Preassembled veneer mats and rims are to the machine operator's left, and finished boxes ready for the driers to her right.

SAVE SANDING COSTS!

How Production-Wise Manufacturers Save Time and Money with AP JEWEL ABRASIVES

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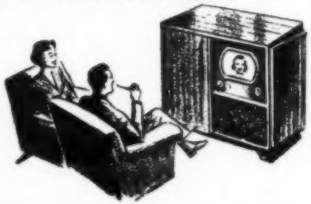

Reports this prominent manufacturer of fine radio cabinets after switching to AP's Bondite New Process Paper Belts. Made with AP's exclusive Velvet Joint that never jumps or scratches, these belts out-performed *all* previously tried abrasives.

JEWEL BELTS FOR JEWELRY BOXES This manufacturer was having trouble finding an abrasive that would bring out beauty of grain in wooden jewelry boxes — give satisfactory wear too. Tried AP Jewel Bondite Garnet Paper Belts — says, "Results best we've ever had!"

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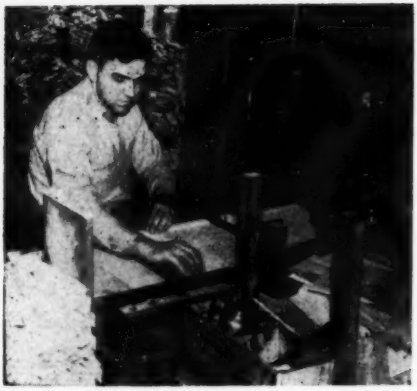


Small cleats are stapled to the veneer by this machine.

industry goes into fruit and vegetable packages and meat and poultry boxes. Of these, fruit and vegetable packages, including crates, account for the major share of the production.

There is a year-to-year variation in the demand for containers. The yearly demand is determined by the size of the crops and the number and prices of containers available from other sources. The manufacturers therefore cannot plan a rigid production schedule or count on manufacturing only specific items each year. A failure of the peach crop may leave the manufacturers of one state with a large supply of peach baskets for which they have to seek other markets. A crop failure in one state often results in a surplus of baskets which may be shipped to another state, and marketed in competition with local products.

Illinois fruit and vegetable growers import a large share of the baskets they use. Perhaps half of the 5 million baskets needed in a normal year to market the apple, pear, and peach crops are manufactured in Iowa, Missouri, Kentucky, Indiana, Tennessee, Arkansas and Texas. A few baskets also come from New York, North Carolina, Alabama, and Ohio. Some baskets are also salvaged for re-use each year.

Baskets

On the average, about 2.3 million (192,000 dozen) bushel baskets are made each year in Illinois. About 90% are sold in the state. It is estimated that about 120,000 of these baskets are shipped to Indiana; 65,000 to Missouri; and 11,000 to Wisconsin. A few baskets are exported to Kentucky, Michigan and Iowa. Some of the baskets exported to neighboring states are again imported by Illinois growers.

Boxes

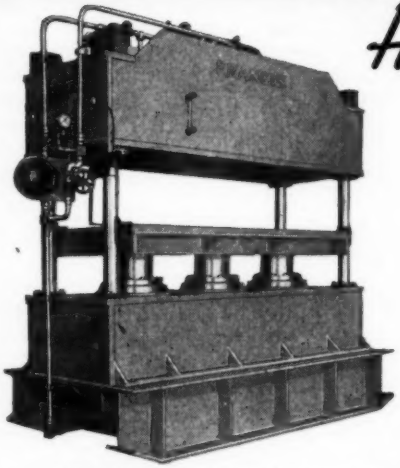
The Illinois industry reported a production of 3 million till boxes varying from 1- to 4-quart capacity. Whereas berry boxes are usually square in cross-section, tills are longer than they are wide. They are most commonly used for artichokes, Brussels sprouts, and other small vegetables and fruits, although retail stores often sell apples, pears, plums, or pansies in them.

Poultry, meat, cucumber, and Leslie boxes are listed in the order of the

This machine staples the wire to veneer for wire-bound meat or poultry boxes.

Francis
EST. 1880.

DEPENDABLE GLUE ROOM EQUIPMENT



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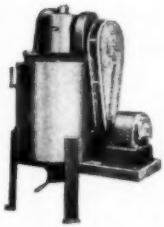
Francis presses are available for all types of laminated work in standard sizes up to 5'x12' platen size. Sturdy, heavy duty construction throughout, custom built to your specifications ... operation is simple and economical ... workmanship of highest quality.



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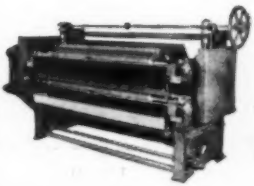
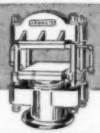


GLUE SPREADERS—Pay for your glue through savings with Francis Double Roll Glue Spreaders designed for proper application. Single top and bottom coating machines, laboratory and experimental models. Simple and accurate adjustments ... easily and quickly cleaned ... in sizes from 12" to 108" in length.

● ***For Illustrated Literature and Details write direct to*** **CHAS. E. FRANCIS CO., Huntington, Indiana, U.S.A.**



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HIGHEST QUALITY
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number produced. The meat and poultry boxes are wire-bound.

Cucumber boxes are of rather thick veneer and nailed construction. Often the grower's name or label is printed on the box at the plant before it is assembled. The Leslie box is small, has greater length than width, and has a "false" or raised bottom. The main feature of its design is that the veneer can be shipped flat and assembled with simple equipment. The corners are angled so that the bottom is held in place by projecting it through horizontal slits at the corners.

Other Products

Dirt bands are used in the growing of plants in greenhouse flats. Tree wrappers are sheets of veneer used to protect the lower trunks of small fruit trees. Tree mats were developed by the Illinois State Division of Forestry as outside wrappers for shipping packages of forest-tree planting stock.

Veneer handles and shingle boards are manufactured, with handles representing the major part of the total. The handles are cut from gum and elm for use on both wooden and fiber market baskets. The shingle boards are used on the tops and bottoms of packages of asphalt or composition shingles to protect them in transit or storage.

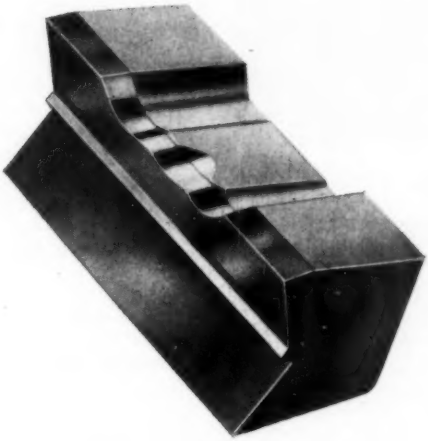
Strawberry boxes and small fruit crates are also manufactured in great numbers.

Efficiency of the Industry

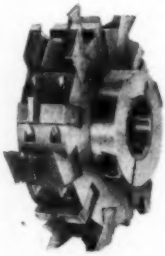
The manufacture of containers is a mass-production business. Methods of operation must be efficient if interest is to be returned on invested capital. Competition, both present and future, demands an efficient, economically operated business.

Although an analysis of methods should start in the woods, few of the companies operate their own woods

Before LABOR Gets Scarce—Investigate



MARCOLOY CARBIDE KNIVES



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crews; so the observations made in this study started in the log yard. No micromotion or time studies were made, but it is believed that the efficiency of the industry as a whole is lower than it should or could be. Efficiency varies widely from company to company.

Considerable discussion centers around the best type of bolting saw—the mechanical dragsaw or the chain saw. The chain saw, which has been developed more recently than the dragsaw, may be more economical and efficient, although there are no data to prove that either type of saw is the better.

More efficient use of floor space would considerably speed the flow of materials through a number of the plants. Some of the factories have grown from modest beginnings to their present size without any intervening reorganization or rearrangement of equipment. As a result, the machinery and other processing equipment is not efficiently arranged, and there is no straight-line flow of materials through the plant. This makes processing in-

These bushel baskets are stacked for drying. When dry, they will be nested in lots of one dozen for shipment to points throughout the midwest.

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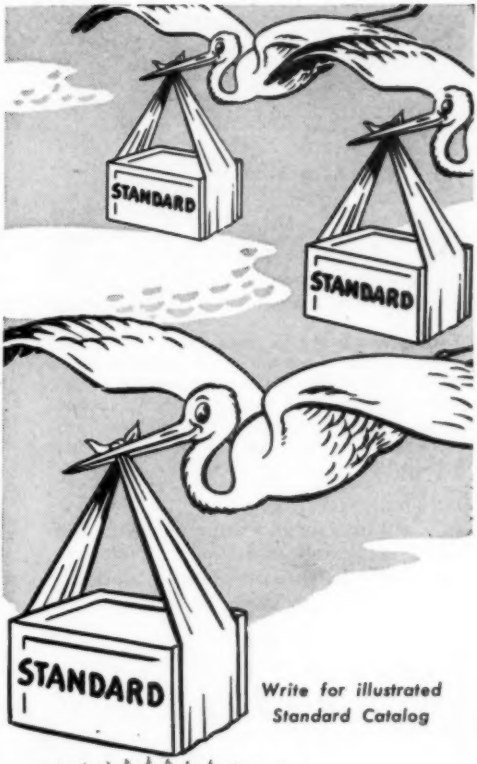

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Each plant band in this greenhouse flat will be used to grow a plant large enough to transplant. Plants, with bands and soil, will then be lifted from the flat and put where they will mature. In foreground are folded bands. One opened and ready for use is on top of the flat.

efficient and time-consuming. Complete modernization would be extremely expensive and the investment probably could not be justified. However, much could be done at a reasonable cost to speed the flow of materials through the plants. Because of the wide differences in factory arrangement and equipment, each plant would have a different reorganization problem.

The type of veneer container manufactured usually depends on the crops grown in the particular state. James, cantaloupe, asparagus and industrial crates are produced mainly by only a comparatively few firms. The James crate was developed for carrying fruit from the orchard to the packing shed. The sides of this crate taper toward the top, facilitating cubical stacking. Veneer framed with thin lumber and sawn cleats is manufactured into cantaloupe, asparagus and industrial crates. The last named type can be used for shipping stoves, refrigerators, etc.

Another factor which reduces economy and efficiency is the use of hand methods in some places where machin-

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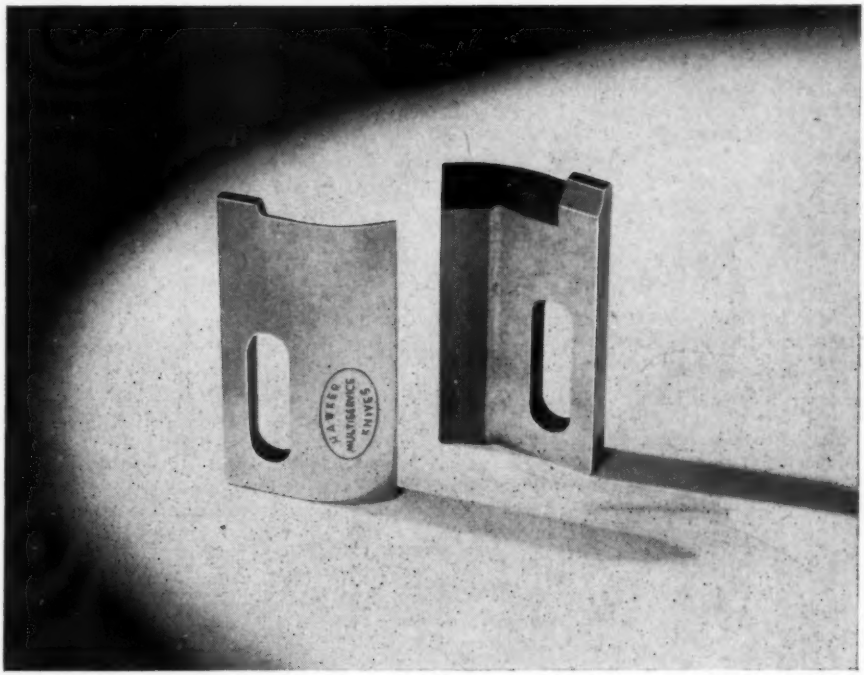

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what a difference there can be in dowel cutter knives. The new Hawker Multi-Service knives are low in price. They're made of special alloy, heat-treated for the best combination of hardness and toughness, and completely precision ground. They virtually eliminate distortion, and breakage from overload. You'll get smoother finish, higher production rates, and up to three times the production per sharpening from the new Hawker knives. Order a set today and let these new knives prove their extra value.

HAWKER

THE HAWKER MANUFACTURING CO., 1425 Keowee St., Dayton 4, Ohio

ery could be effectively substituted. Debarking is done by hand, although it may be possible to add debarking devices to present veneer lathes. In a number of plants, box components are taken from one point to another by hand methods. Conveyors, wheeled trucks, or dollies could be used to good advantage. Perhaps more money is lost through inefficient handling of waste than in any other way. Waste materials are handled by hand methods in many of the plants, even though it would be practical and economical to make use of power conveyor systems.

Reduction of waste is important from the standpoint of conserving raw materials as well as for conserving labor. Waste starts in the woods when trees that cannot "pay their way" are cut. The value of the raw materials obtained from such trees is not equal to the cost of harvesting and hauling them. Many of the manufacturers have little control over the type of tree to be cut, since they buy logs from log producers or farmers, but the future existence of the industry depends to a large degree upon eliminating waste of all types.

These bundles of veneer basket handles are ready for shipment. The handles are bent while they are wet and pliable and tied to keep them from straightening.

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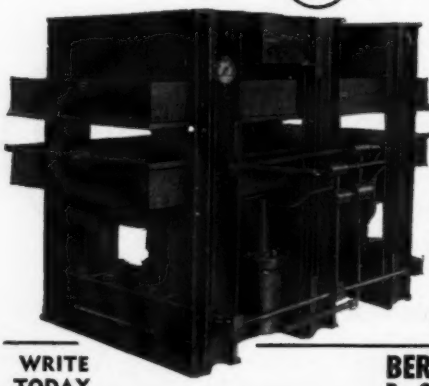

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Future of the Industry

One of the major considerations in an analysis of the future possibilities of the industry is its supply of raw materials. To stay in business, each manufacturer must have a sustained flow of logs of the right quality and species from the woods to his plant. He must obtain the logs at a cost which will allow him to sell his product at a profit in a competitive market.

Forest tree seedlings are packed in moist sphagnum moss before they are wrapped in a veneer tree mat. The entire bundle is secured with wire for shipment.

Managing tree stands is an important factor. Woodlands respond to protection from fire and grazing and to good cutting practices by producing a larger crop of high-quality timber. The manager must cut no more than his woodland will grow each year, for overcutting and high-grading (taking only the best trees) will eventually result in woodland deterioration and a reduced wood yield.

Laborers with specialized skills are needed to harvest and deliver veneer logs to the mills and to convert the logs into veneer containers. Producing the logs requires more skills than most of the jobs in the plants. Even the highly specialized job of a veneer lathe operator can be filled by an employe who has had only one year of training, and most machine operators can be trained

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For American's new high-production plant in Willimantic is now geared up to meet all demands promptly and efficiently. And this production is further augmented by the American plant at Norristown, Pa., while distribution is kept on a "delivery now" basis by large warehouse stocks in Norristown and Chicago.

So today, if you want *action* on orders for Phillips and slotted fasteners . . . just mark those orders "AMERICAN"!

Norristown, Pa., plant, now a full-scale American production unit manufacturing a complete line.

Chicago Warehouse in North Pier Terminal, 589 E. Illinois St., Chicago, Ill.

AMERICAN SCREW COMPANY

Plants at:
WILLIMANTIC, CONN. and NORRISTOWN, PA.
Warehouses at:
589 E. ILLINOIS ST. CHICAGO 11 — 502 STEPHENSON BLDG. DETROIT 2

4-WINGED DRIVER CAN'T SLIP OUT OF PHILLIPS TAPERED RECESS

Phillips

AMERICAN SCREWS

Slotted

in less time. It takes considerably longer to acquire the skills necessary for a woods worker.

Woods workers must develop not only the skills required for their hazardous work but also the stamina for felling trees, cutting them into logs and hauling them to market. They must also acquire at least a tolerance for an environment that is often uncomfortable.

With Regard to Competition

The industry's competition is mainly from firms in areas paying lower wages. However, the container manufacturers are also in competition with the lumber industry so that the prices offered for logs must be high enough to secure the veneer-quality logs needed.

Companies manufacturing fruit and vegetable containers have the problem of marketing their products in competition with second-hand or used containers. A well-made bushel basket, for example, may not be physically damaged after it has delivered one load of fruit to the consumer. As the cost of containers increases, the number reused also increases. For a number of reasons, however, the use of second-hand containers is discouraged. Unsanitary containers obviously should not be used, and containers bearing the label of one packer or distributor cannot, according to law, be used by other dealers unless they destroy the label. There is also the possibility that second-hand containers will cause the product contained to lose its attractiveness or "consumer appeal."

A report made nearly 40 years ago indicated that veneer boxes were then "making rapid progress in competition with the fiber package." More recently, however, the fiber package has been developed to the point where it competes with at least some types of veneer packages. It is less expensive, has an attrac-

BIRDS EYE •
OS EYE • BIRDS EYE • BIRDS EYE
USE...
Birds
Eye
MAPLE
A BLOND FIGURED WOOD FOR DECORATIVE PURPOSES.
Birds Eye Maple is one of America's finest cabinet woods. It is full rotary cut thus assuring good wide sheets and is available in substantial quantities from us at all times.
ESCANABA, MICHIGAN
BIRDS EYE Veneer Company

tive appearance, and can be transported and stored knocked-down. Such containers can also be printed or decorated more easily than wooden containers.

Although the present veneer container is to its prototype what the modern automobile is to the gasoline buggy, new methods of packaging are creating competition. Many fruits, vegetables and other foods are now frozen or dried near the area where they are grown and shipped by air in other than wooden veneer containers. Packaging in various paper and plastic materials has often made the foods more attractive to the potential consumer.

Buyers have often complained that goods shipped in wood-substitutes have arrived at domestic and foreign destinations in unsatisfactory condition. Modern methods of transportation still require a light, strong container that can stand punishment without deteriorating, and veneer containers satisfy these requirements. That they have withstood competition from other materials for many years is the result of long, satisfactory service. While modern methods of harvesting certain small grains tend to create a scarcity of straw for the strawboard manufacturers, wood crops can be grown continuously with a minimum of effort and expense. It is predicted that the demand for wooden veneer containers will continue into the future.

The End

PRE-BLEACHED VENEERS

New pre-bleached veneers announced by Aetna Plywood & Veneer Co., simplify the process of color finishing and protect the color application for modern furniture, wall paneling and store display fixtures.

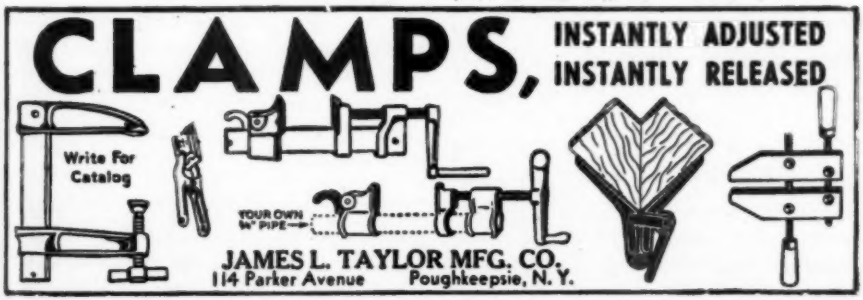
The use of plywood made with pre-bleached veneers in the building, decorative and display fields, as well as in the manufacture of furniture, radio and television cabinets and store fixtures, is easier, safer and proves to be less expensive than the use of surface bleached veneers, all factors considered.

The use of Aetnaply pre-bleached veneers speeds up production by completely eliminating the slow operation of surface bleaching, saving the time, space and expensive equipment devoted to it.

The thoroughness of the bleaching is industrially important. All the original pigments and minerals which affect colors are permanently removed, preventing any possibility of original wood colors ever bleeding through. This provides a smooth, reliable surface with all the beautiful natural grain and life of the wood retained.

Aetna Plywood & Veneer Co., 1737 N. Elston Ave., Chicago 22, Ill.

Instead of attempting to find everything new under the sun, maybe we'd all be better off if we tried to get the most from the old things.



With *Raybond* Electronic Gluing "sunken joints are practically non--existent"

Says famous Kittinger Co., Inc.

Another production problem licked with a Raybond Electronic Panel Gluer!

The well-known Kittinger Co., Inc. installed a Raybond in 1948 then wrote this about it:

"Since . . . installed, we have glued all our poplar core stock, our solid maple and also solid mahogany lumber, in sizes up to . . . 1½" thicknesses (with Raybond) . . . panels produced are much flatter than those produced by the standard method . . . can be used much sooner . . . sunken joints are practically non-existent."

Like Kittinger, you can profit with Raybond—*the one-man* machine that does the work of a whole department! For proof of savings, write today for bulletins.

Raybond announces new products!

- ***H-F Veneer on Frame Press**
- ***HF Edge Banding Press**
- **Portable Wood-Bonding Gun**
- **Special assembly jigs and presses**

*** *High frequency***

Write for details

ELECTRONIC HEATING CORP.

66 Needham St. Newton Highlands, Mass.

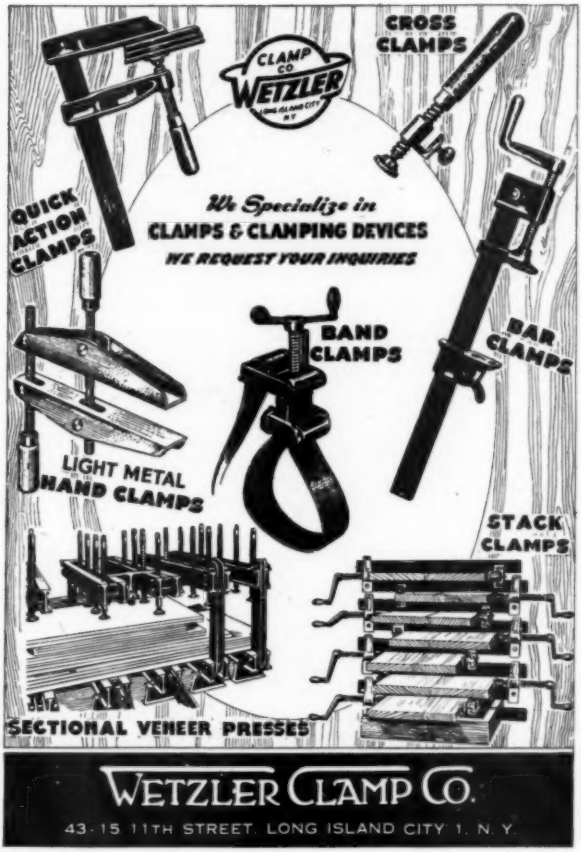
Post-Market View

One of the best Summer Markets in history will be the final verdict when the score is tallied on the 1950 event at the American Furniture Mart.

It was a pace-maker for new patterns and well-designed merchandise — the most exciting market within memory in this field.

It was a sales-record-smasher for many manufacturers; a better-than-average summer market for the majority; normal for some, and sub-normal for a very few.

It was one of the largest markets in summer history, though not the largest. Attendance figures are expected to run just over 19,000 buyers when the final



tally is completed and audited, and already showed at least five hundred over the 1949 summer showing. Inasmuch as winter markets always run at least 20% ahead of the summer events, 1950 will be no exception, particularly since the January showing was an all-time record-breaker.

The majority of exhibitors and buyers appeared to approve the late-June dates which brought the market to a close in advance of Independence Day. There were some who felt that more small stores would have appeared in July, because June is normally a good month for sales, and in smaller operations the owner-buyer could not leave.

The typical home furnishings store covered itself for 90 days ahead on inventories. This was in sharp contrast to last year's summer market, when many followed hand-to-mouth buying policies and attempted to skim along on 30 to 60 days' needs believing themselves overstocked. Fall consumer demand proved their estimates wrong, and many found replacement merchandise unavailable.

Merchants this year were optimistic about prospects for fall business when

where'd he come from?
The router bit without a background is a risky investment. Router bit makers tend to come and go. Onsrud, however, has been a manufacturer of router bits and shaping cutters for over 30 years. In this time thousands of customers have found that Onsrud bits are always dependable, high in quality, and low in cost. And the "background" for each Onsrud cutter is the Onsrud name . . . your guarantee of proper materials and manufacture for better woodworking. Write for Cutter Catalog 44-S.
FOR LOW COST SHAPING WITH
Routers
Shank type shaping cutters for use on routers, give you low cost shaping at good production speeds. Many standard shapes in wide range of sizes are available. Why not write for prices on these money saving Onsrud cutters?
ONSRUD CUTTER MFG. CO.
LIBERTYVILLE, ILLINOIS
PHONE LI 2-1560

the market opened, and nothing happened while they were here to make them change their minds. Flair-up of hostilities in Korea early in the second week failed to change the course buyers had set. There was little more that could be done at that point in anticipation of possible consumer buying stampede. Some manufacturers had stopped taking orders; they were already holding off on commitments beyond October 1 to see what happens to raw material prices.

Few would hazard guesses on what a prolonged war might do to delivery dates. Shortages might develop in steel, rubber, fabrics and lumber, some feared. Most manufacturers said they would try to fill all orders on hand, although there might be some delay.

A leading table manufacturer (Mersman Brothers Corporation) disclosed his plant was booked to production capacity for the fourteenth consecutive market.

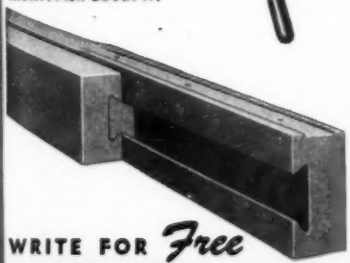
The steady ascent of contemporary

Wabash

SLIDES AND FOLDING LEAF EQUIPMENT

Wabash Slides on extension tables eliminate "drooping" when extended.

There is a type of hardware in the Wabash line for every requirement. Ask about it.



FOR NEW TABLES

NOW IS THE TIME to improve extension table design. When operation is smooth and easy, tables have the added appeal and convenience today's buyers demand. Wabash Slides and Folding Leaf Equipment may be engineered to your table for smooth action and smoother production. Have your extensions and hardware "styled by Wabash experts" at no extra cost. We can help make your tables more salable.

WRITE FOR *Free* ENGINEERING CONSULTATION BLANK

G. WALTER COMPANY, INC. WABASH, INDIANA

Walter of Wabash

POINT IT *where you want a hole . . . and* **PUSH.**

"YANKEE"

No. 41 Automatic Drill

● For drilling small holes in wood, plastic or plaster. Just point and push . . . an easy one-hand job with this "Yankee" Push Drill. Handle comes back after every stroke, ready for the next push. Eight different size drills inside handle . . . 1/16 to 11/64 inch . . . easily inserted and removed from chuck. Chromium plated, made to give a lifetime of service.

Write for "Yankee" Tool Book.

YANKEE TOOLS NOW A PART OF

STANLEY

THE TOOL BOX OF THE WORLD

NORTH BROS. MFG. CO.

Philadelphia 33, Pa.

styling, and the appearance of "the luxury look" characterized the 1950 Summer Market at the American Furniture Mart.

There were 10% more numbers shown in the June event than were present at the January showing in the same year. In case goods alone an additional 115 suites were shown.

LIQUID SANDPAPER

Development of a new chemical compound, which can replace tedious sanding of surfaces preparatory to refinishing, is announced by its manufacturer, General Liquids Corporation.

Sold under the registered trade mark, "Liquid Sandpaper," the new chemical compound removes wax, grease and polish. It is said to also remove deeply imbedded dirt and grime, no after rinse required.

Company spokesmen say that "Liquid Sandpaper" eliminates the need for sanding painted wood, metal and plaster surfaces, before refinishing. It dulls the gloss and thus provides a flat undercoat. It will achieve perfect surface preparation in minutes, instead of hours of hard, dusty sanding.

The above Company, 129 E. Baltimore St., Baltimore 2, Md.

KIRK AND BLUM EXPANDS

The Kirk & Blum Manufacturing Company, Cincinnati, one of the nation's leading dust and fume control manufacturers, recently acquired the entire plant and property of the Cincinnati Planer Company. The plant, located at 3120 Forrer Street in suburban Oakley, will be occupied by Kirk & Blum about the end of the year.

The acquired acreage will allow considerable expansion when necessary. Kirk & Blum's five warehousing and manufacturing facilities, now scattered throughout Cincinnati, will be consolidated in the Oakley plant.

STOP DUST IRRITATION ...with NEW Sensational
Flex-a-foam
FILTER MASK
Trial Sample $1.50 Postpaid
Easier to breathe through and talk through than an ordinary pocket handkerchief — yet filters non-toxic nuisance dusts as small as 1/25000 of an inch.
Extremely light weight—only 1 oz. complete.
Self-adjusting to every face size.
Attractively styled to suit the most discriminating wearer.
Simple in design: only four parts—four tough, long-wearing, interlocking parts.
Only respirator made with long-lasting washable filter—can be used over and over again.
Write TODAY for Descriptive Circular
Here's dust protection ... your workers will welcome and WEAR!
THE GOGGLE PARTS COMPANY
1468-70 W. 9th Street • Cleveland 13, Ohio

Cub Helps in Forest Fire Prevention

Smokey, a 3-month-old black bear cub who survived a forest fire in New Mexico, will spend the rest of his life helping foresters in their campaign against forest fires. The thousands of people who see Smokey in the Washington, D. C., zoo are reminded of the dangers of forest fires.

Six weeks ago, Smokey was found clinging to a charred tree near Capitan, N. M., after a fire had destroyed 10 million board feet of timber and killed untold wildlife on the Lincoln National Forest. New Mexico state game and

VONNEGUT HEADS AND VONNEGUT SPINDLES

If your job is one of sanding and polishing "in-the-white" or finished surfaces — the Vonnegut Brush-Backed Polishing Head is the ideal tool for this work. The Head sands and polishes carvings, flutes, mouldings, etc., in only a fraction of the time required by hand operations.

Used on the big, stiff Vonnegut spindles (available in all sizes), they do a perfect job. No **whip!** No **flutter!**

This combination of Vonnegut Heads on Vonnegut spindles "can't be beat". Whatever your finishing problem tell us your story. This Vonnegut combination may be a solution for you.

VONNEGUT
MOULDER CORPORATION
1823 MADISON AVENUE • INDIANAPOLIS 25, INDIANA

fish officials, taking pity on the cub, took him to Santa Fe, N. M. There he was treated for third degree burns and nursed back to health on a diet of pablum mixed with honey and milk.

Pictures of the little cub with the bandaged paws appeared in newspapers across the country. Almost overnight, he became famous. His forlorn expression touched the hearts of millions of readers.

Elliott S. Barker, New Mexico game warden, offered to let the U. S. Forest Service present the cub to the national zoo as a living symbol of the need to be careful with fire in the forest.

At this point, Smokey got his name. He was named for the poster bear used in the forest fire prevention campaign carried on by the U. S. Forest Service under the sponsorship of the Advertising Council, Inc. He is a live Smokey helping carry on the work of the poster Smokey.

Forest rangers look over charred ruins of burned timber where "Smokey" a black bear cub was found suffering from third degree burns. Started by a carelessly tossed cigarette, the forest fire burned over 20 thousand acres of the Lincoln National Forest in New Mexico, destroyed 10 million board feet of timber, killed the cub's mother and countless other wildlife.

Lyle F. Watts, chief forester of the U. S. Forest Service, presented Smokey to the Washington zoo on June 30. "If Smokey could talk," Mr. Watts said, "I'm sure he would tell us plenty about the need for protecting our forests and all the wild creatures that live in them."

Already Smokey is one of the most famous residents in the zoo. He has been on television programs. His picture has appeared in newspapers and magazines. Hollywood wants him for a movie. But, most important of all, he is making people more conscious of the destructiveness of forest fires.

U. S. Service officials are delighted. They think Smokey is worth more than 10 tons of pamphlets when it comes to preaching a forest fire message.

Little Smokey and his namesake's poster urge man to be careful.

WIRE STITCHING CATALOG

How Bostitch box bottom stitchers and staplers can save you money in three ways is described in Folder Ptg. 229B. This folder, which will be helpful to all who ship with corrugated cartons, illustrates Bostitch wire stitching and stapling machines for box bottoming.

The above Company, 803 Mechanic St., Westerly, R. I.

STOP DUST

DUSTKOPS — **20 Models**

UNIT TYPE — 300 to 3600 cfm
LOW COST — ¼ hp to 5 hp

AVAILABLE FROM STOCK

For: Grinders, buffers, polishers, woodworking, lint . . . All Dusts.

Send for Cat. 605a; describe problem.

AGET-DETROIT CO. • ANN ARBOR, MICH.

THE ELECTRIC

LESTO

PORTABLE HAND-SAW

Designed, Manufactured and Patented by Scintilla, Ltd., Switzerland, since 1944.

Saw Where You Wish

Powerful new portable saw will start in middle and cut curves anywhere on the job.
Few tools can approach the versatility of the Electric LESTO Saw. Its finely ground, projecting blades saw at 2400 strokes per minute, with uniform power throughout each stroke—sawed edges are left virtually smooth. Gears and bearings are contained in a separate unit sealed against sawdust and dirt. Cutting lines are kept sawdust free by built-in blower fan.

Cuts Metal Too

Special blade can be used to cut any kind of metal.
SEVERAL THOUSAND ALREADY IN USE IN THE UNITED STATES.

Sold and Serviced throughout the World.

For further information regarding descriptive literature and names of distributors serving your area, contact:

Write directly to: **VICTOR KRIEG** **Sales Manager** **15 Moore Street, New York, New York**

SCINTILLA S. A. **Soleure Switzerland**

WWD Industry Notes

COMPANIES CONSOLIDATE

The Blair Veneer Company of North Troy, Vermont and its wholly owned subsidiary, Vermont Plywood, Inc. of Hancock, Vermont, are now consolidated into one company. The name of this consolidated company is Blair-Vermont Plywood Company.

The major advantage of centralizing general management in one location is to permit individual plant managers to devote full time to production and quality.

NATIONAL HARDWOOD PLANS CONVENTION

The 53rd convention of the National Hardwood Lumber Association is scheduled for September 26-28, 1950 at Cincinnati. Further information can be obtained from Association headquarters, 59 E. Van Buren St., Chicago, Ill.

NEW SALES ARRANGEMENT

It has recently been announced by Chas. E. Francis Co., of Huntington, Indiana, that the sales of their entire line will be handled exclusively throughout the world by Plycor Company, a division of Earle Hart Woodworking Machine Company of Chicago. The only exception to this arrangement will be in the states of Oregon and Washington where the present Francis representatives will continue to function.

Chas. E. Francis Co. have, for the past 70 years, manufactured and sold their well known line of hydraulic cold presses, hydraulic precision veneer jointer-cutters, glue spreaders, glue mixers and retaining clamps.

Plycor Company is well known as the manufacturer of Plycor hydraulic hot plate presses, Plycor hydraulic lumber presses, Hart-Union electrogluers and Hart-Union electronic assembly presses as well as complete equipment for hardboard production.

Combining the products of these two manufacturers enables Plycor Company to offer a complete line of glue-room equipment in every needed size and type to meet any requirements. Chas. E. Francis Co. will continue to manufacture the products bearing their name but the sale of both lines will be integrated in a single organization administered through the Plycor Chicago office and its branches and sales representatives.

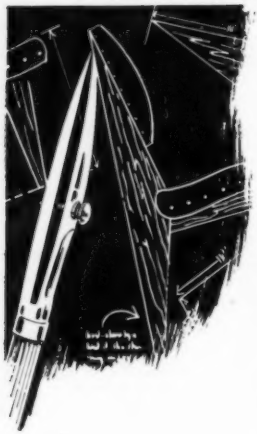
CARBIDE SAW & TOOL COMPANY

The Carbide Saw & Tool Company has announced the details of that firm's new expansion program.

Engineering, administration and sales offices are now located at 327 So. La Salle Street, Chicago 4, Ill. Additional machinery and equipment has been added to the production lines of this firm's plant located at 2009 W. Iowa Street and enables the firm to provide "in today—out today" sharpening service. This increase in production facilities also cuts delivery time on new blades to a minimum, it is said.

Mr. Charles E. Kelly was appointed assistant sales manager.

PLANNING A NEW PRODUCT . . .



. . . OR RE-DESIGNING AN OLD ONE?

In either case, you'll be looking for a **practical** solution based on keeping over-all production costs low, quality high, and selling prices in line. Only then can you feel reasonably assured of adequate profits on your investment.

Helping you to solve production problems and keeping costs low, without sacrificing style or quality, is a job we're geared to do well. Our accumulated experience of 50 years in solving wood engineering problems is yours for the asking . . . without obligation.

Gamble Brothers Incorporated

Engineered Wood Parts in Southern and Appalachian Hardwoods or Mahogany

MAIN PLANT: LOUISVILLE 9, KY. ● **BRANCH: MONTGOMERY, ALA.**

Here's Cutter Accuracy!

Plus Faster Cuts, Longer Life and Safer Operation for

ROUTING • CARVING • SHAPING

Behind every Porter Cutter is over 60 years of active experience in the woodworking field . . . your guarantee for the finest in cutter performance.

If you use quality cutters it will pay you to check with Porter before you buy.

Ask for your free copy of the New Porter Cutter Catalog No. 50. It's complete with illustrations, specifications and prices! Send for your copy now.

PORTER-*built* CUTTERS

C. O. PORTER MACHINERY CO.
(CUTTER DIVISION)
530 PLYMOUTH RD. N. E.
GRAND RAPIDS, MICHIGAN

Appointments

Appointment of **W. Dale Marshall** as sales manager of the Forest Fiber Company, manufacturers of Forest Hardboard, Forest Grove, Oregon, has been announced.

Marshall was recently with the Stimson Lumber Company, parent company of the Forest Fiber Products Company, both located at Forest Grove, Oregon.

Protection Products Manufacturing Company, Kalamazoo, Michigan, has announced the promotion of **H. C. Kennedy** to assistant general sales manager. Mr. Kennedy, who joined the organization in 1943 as a salesman, has for the past three years been middlewest district manager.

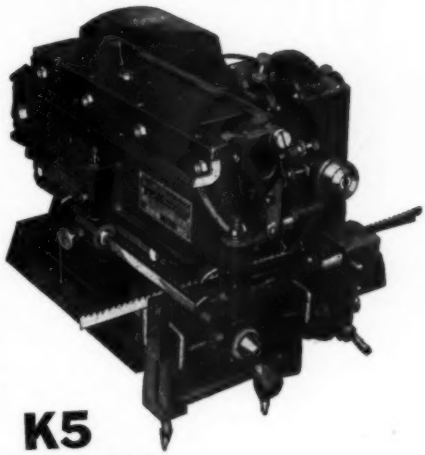
The board of directors of the Westinghouse Electric Supply Company, New York, N. Y. has elected **John F. Myers** as president to succeed David M. Salsbury. Mr. Salsbury will become vice president in charge of Texas and Pacific Coast operations of the Supply Company with headquarters in San Francisco.

Andrew E. O'Leary has been transferred from St. Louis to Cleveland to direct eastern Ohio sales of DeWalt high-speed radial saws, manufactured by DeWalt, Inc.

Dr. John B. Davidson has joined the technical department, Plaskon Division, Libbey-Owens-Ford Glass Company as group leader in charge of silicone and industrial chemical research. He succeeds Dr. David B. Hatcher who has recently advanced to sales manager for glues and industrial resins with Plaskon.

Vice president and general manager of the Lehwood Corporation is **Elmer A. Skonberg.** He will have full management responsibility for the further development and promotion of the Lehwood woodworking processes.

IN ONE OPERATION



K5 FILES, SETS and JOINTS *BAND SAWS*

Wardwell K5 replaces 2 separate machines and thus reduces sharpening time by 50%

After the saw is clamped in vise the K5 requires no further attention. Its speed is the equivalent of four men working by hand and far greater accuracy. The teeth are filed, set and jointed with absolute uniformity. The result is obvious in cutting. Cleaner, faster cutting, longer periods between replacement. Write for bulletin K5

The Wardwell Mfg. Co.

3161 FULTON RD., CLEVELAND 9, OHIO

8-10-50

YOU'RE NEVER

PENNYWISE AND POUND FOOLISH

When you buy

Certified TAYLOR-MADE FELT AND BATTS!

Good felt depends on much more than price . . because when you depend on price alone, there is *no guarantee of quality.* "Bargain" felt can result in a penny wise pound foolish purchase that costs the buyer in loss of time, loss of quality products and loss of customer good will.

When you buy Taylor-Made felt and batts you buy a *certified guarantee of quality* with every bale purchased. You buy top-quality felt made from tough Texas cotton that gives more resilience and greater filling capacity . . works better, is easier tailored, gives you a better looking finished product. You buy felt that is always uniform, cleanly trimmed and fabricated to the exact width, weight and grade specified. And, you buy priceless good will with every bale of Taylor-Made felt . . the good will that comes from giving your customers good looking, well-filled, well-tailored quality products that make them come back for more.

REMEMBER . .

there's no guess work when you buy Taylor-Made felt and batts . . every bale is

Certified

- 100% new cotton stock. No second-hand material.
- Exact blends of cotton as labeled.
- Correct weights, double checked on automatic scales.

TOUGH AND HARSH ***"Tops" for your upholstery and filling needs***

TAYLOR
BEDDING MFG. CO.
The World's Largest
TAYLOR, TEXAS

Equipment and Supplies for the WOOD WORKING INDUSTRY

HYDRAULIC RAMS SPEED CLAMPING OPERATIONS

The rapid growth of the use of hydraulic apparatus is due to the many favorable characteristics over mechanical equipment requiring gears, cams, screws, and levers. By means of hydraulics, motion can be transmitted without time and power losses.

Hydraulic tools are in common usage today. In garages the hydraulic jack is used to raise cars and trucks. Dentists and barbers use hydraulics to raise chairs with a few strokes of a hand or foot lever. Hydraulic brakes on automobiles are a fairly recent development and are now standard equipment. Aeroplanes use hydraulics to raise and lower wheels in take-off and landing. Hydraulic presses have long been used in the woodworking industry in plywood manufacture.

The principle of hydraulic pressure is simple. Just as a lever can lift greater weights according to the distance away from the fulcrum or balan-

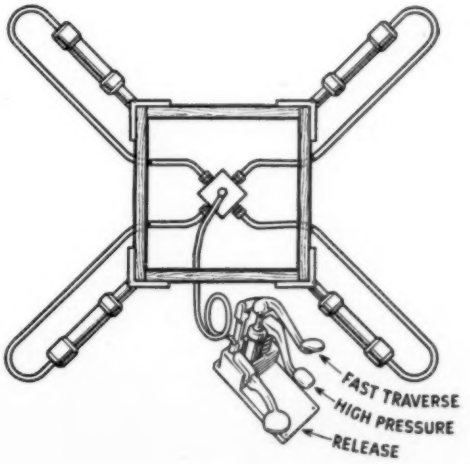
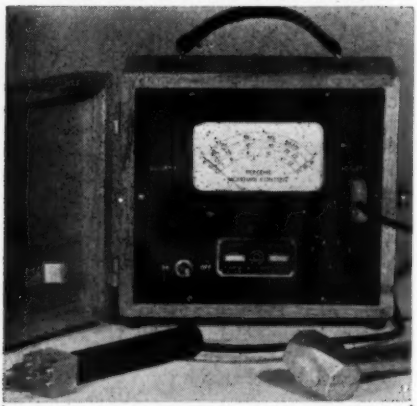


Illustration shows schematic principle of foot operator and four hydraulic rams, clamping and unclamping as a unit.

THE NEW
Delmhorst
MOISTURE DETECTORS



QUALITY CONTROL MEANS IMPROVED PRODUCTION

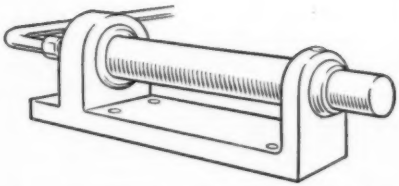
To improve your production and have fewer rejects, maintain the moisture content of the raw material within limits. The model RC-1 **Delmhorst Moisture Detector** accurately measures moisture content from 5 to 65 per cent in all kinds of wood either rough or smooth. Readings are made directly on the meter — no dial or knobs to turn, no calculations required. Interchangeable electrodes for testing veneers, timbers, poles or other special tests are available.

FEATURES

Moisture content read directly on the dial — no knobs or switches to turn.
Large size, easy-to-read meter.
Small size — light weight can be carried on shoulder strap, leaving both hands free to handle the stock.
Long life batteries, last 6 months to a year.

WRITE FOR CIRCULAR . . .
complete information . . .

DELMHORST INSTRUMENT CO.
112 Cornelia St. Boonton, N.J.



Hydraulic ram, mounted in fixture, that can be operated in horizontal or vertical position.

cing point, so in hydraulics the non-compressibility of oil can be utilized in a confined area to transmit a force in ratio to the diameters of the pressure or in-put piston and the out-put piston.

These principles are applied in the design of the Studebaker hydraulic foot pump, to operate a multiple of rams used for clamping in the furniture industry.

Hand screw clamps must be closed and opened individually. By use of a hydraulic foot pump connected to four or more rams (see illustration), four clamps can be closed or opened simultaneously. Since the pump is foot operated, the workman has both hands free to handle the work. Any pressure can be applied from a light squeeze to pressure of several tons.

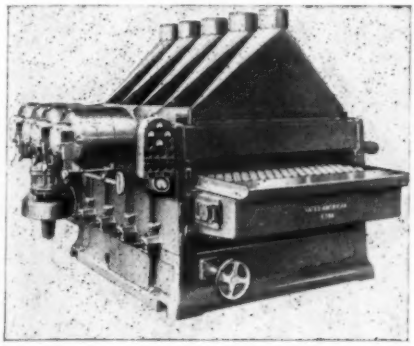
By this method, clamping and unclamping time is reduced from minutes to a few seconds and work is done with very little physical effort, we are told. It is reported by many users that this equipment will pay for itself in reduction of time-cost of former clamping methods in less than one year.

Cauls can be fitted to ends of rams for curved as well as square surfaces. One or more rams can be mounted on tables, benches, or pedestals. Mounting can be vertical or horizontal and changed to meet requirements.

Engineering assistance in setting up clamping operations may be obtained from the manufacturer, Studebaker Machine Co., 1221 S. 9th Ave., Maywood. Ill. For additional information write this firm or WOOD WORKING DIGEST.

ENDLESS BED SANDER

A complete line of newly designed endless bed sanders has been announced by the Yates-American Machine Company. Illustrated here is the S-334 four drum sander. The S-333, a three drum machine and the S-332, a two drum machine are also offered.



The manufacturers call special attention to the variable speed feed drive which is furnished as regular equipment. This variable speed drive makes available an infinite range of feed speeds from 12 to 36 f. p. m., and permits the selection of the exact speed needed for the work at hand.

Another important feature is the continuous lubrication which is provided for the chain links of the endless bed. This oiling system is positive in operation, assures smooth bed travel and prolongs the life of the chain links and pins, we are told.

The drum shafts are heavy and have short extensions. This prevents whip and overcomes any tendency for long drums to spring under load. Accurate adjustment of the drums is obtained by the use of tapered wedge blocks. Separate motors are provided for the oscillator drive, feed and hoist.

All three machines are available in a number of sizes ranging from 31" wide and up.

Yates-American Machine Company, Beloit, Wis.

More Service FOR YOUR MONEY from a Mall 7" HEAVY-DUTY POLISHER-SANDER

Model 127 PS **$39.50**
Weighs only 7½ lbs.

OPERATES OVER 50 ATTACHMENTS for Polishing, Sanding, Drilling, Metal Shearing, Wire Brushing, Rotary Filing, and many other applications.

A QUALITY TOOL at a ridiculously low price. Built for continuous use. Powerful 115 volt AC-DC motor is designed to deliver constant speed with every attachment. Furnished with 7" backing pad, polishing bonnet, and assorted abrasive discs.

HEAVY-DUTY ½" MallDrill
$39.50 Model 127

Has all the features of the Mall 127 PS Polisher-Sander illustrated above. Equipped with ½" Jacobs Chuck. Has ½" capacity in metal, 1" in wood, 500 r.p.m.

Write today for FREE 52-page booklet "Mall Tools" and name of nearest dealer.

32 Factory Owned Service Stations from Coast to Coast provide quick, dependable repair service. Over 1000 Mall Tools for a million jobs. A Dealer in any town can supply you. 30 years experience manufacturing portable power tools.

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INSTALL A

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DUST CONTROL SYSTEM

Uncontrolled dust in your plant may mean the difference between substantial profits and losses. Your production is always higher when working conditions are better. If your present dust collecting system is obsolete, if you are considering additions, or if you need a completely new dust control system, consult us. Young & Bertke engineers are specialists in the design and installation of efficient, low cost, dust control systems. We will be glad to talk to you. There is no obligation.

The YOUNG & BERTKE Co.

1122 Buck Avenue Cincinnati 14, Ohio

VOLUNTARY REDUCTION IN HOUSING OUTPUT ASKED

With housing production at its highest rate in history, the National Association of Home Builders has requested its members to curtail production in accordance with President Truman's wishes.

Thomas P. Coogan, of Miami, N. A. H. B. president, said a voluntary reduction in the number of homes started would accomplish two major objectives: 1. Reduce materials and manpower for civilian needs, in line with President Truman's military program in Korea, and, 2. Help stop the inflationary trend in building construction costs.

"The industry has demonstrated its ability to produce an immense volume of housing at prices the average family can afford. About 142,000 new homes were started in June, an all-time record," Mr. Coogan said.

"The President has indicated that the industry should slow down this record pace. New credit regulations are in ef-

PACKAGE HANDLING

ElectroniK Control

Drying Capacity . . . Ten Cars of Lumber

"These are the most modern kilns available and are especially designed for the production of high quality dry lumber of all kinds. They can produce dry lumber at the rate of several carloads per day. Lumber is placed CROSSWISE in the kilns by means of fork trucks. Each package of lumber contains 2,000 board feet, and they are stacked four packages to a height of over 20' - 0". These are "external" kilns, which means that all heating and operating equipment is located outside the kiln proper. In this case the equipment room, containing the heating units and fans, is located above the kilns at the top of the stairway at the right. Temperature, humidity, and ventilation are controlled exactly by the ElectroniK POTENTIOMETER MULTIPLE THERMOCOUPLE METHOD."

* The Imrie Dry Kiln Co. appreciates this report from the largest manufacturer in its field.

IMRIE DRY KILN COMPANY

PEARL & OTTAWA ST. GRAND RAPIDS, 2, MICH.

fect calling for increased down payments.

"A voluntary curtailment of housing will accomplish the President's objectives, according to estimates of the National Association of Home Builders. We hope such action will make priorities and control of materials unnecessary."

PLANT MAINTENANCE SHOW

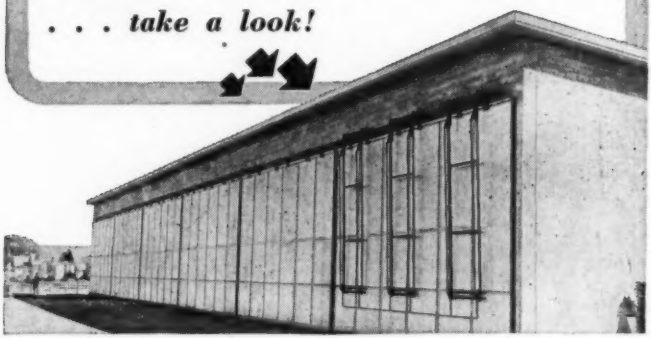
The Plant Maintenance Show, which drew industrial executives from 35 states and many foreign countries when it was conducted for the first time early this year, will be held again at the Auditorium, in Cleveland, O., Jan. 15-18, 1951, it is announced by Clapp & Poliak, Inc., New York, the exposition management.

Present indications are that it will be two to three times the size of the initial show. Already, 120 companies have leased booth space which exceeds by 61% the total area used for the first show.

Also to be repeated will be the Plant

HAVING KILN DOOR TROUBLES?

. . . take a look!



● Here is a battery of big Uni-Temp *Heavy Duty* Doors at Pacific Manufacturing Co., Santa Clara, California. Uni-Temp Doors like these have strong, rigid, welded steel frames—covered with durable, corrugated aluminum. They won't sag, warp, or split—*practically eliminate maintenance!* Efficient insulation and vapor sealing *saves fuel.* Notice the triple Universal Door Carriers. Connected in tandem, they enable ONE MAN to open or close a kiln in *a few seconds!*

Write, wire, or phone (CApitol 8677):

SINCE 1904

UNIVERSAL DOOR CARRIER, INC

1117 CORNELL AVENUE
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MANUFACTURERS OF QUALITY DOORS AND CARRIERS

Maintenance Conference which attracted approximately 1,500 engineers and executives, one of the largest attendances recorded at technical sessions of this type. L. C. Morrow, consulting editor, Factory Management & Maintenance, will serve as chairman.

"The Korean crisis makes it imperative that every industrial executive re-examine his maintenance methods," declared Saul Poliak, vice-president. "Even in normal times, the maintenance budget is mounting to as high as 25 cents of every sales dollar in some industries. This staggering multi-billion dollar drain on our resourses is an urgent problem in peace time. In times of crisis, maintenance becomes the prime factor on which our production continues or fails."

"Most people can't stand prosperity," says an eminent sociologist. The sad part is, most people don't have to.

ReNew *Gives new life to sandpaper*

AND CUTS SANDING COSTS 50%

Keep your sandpaper cutting for you with ReNew. Apply . . . let it dissolve the pitch or resin . . . then brush it off with a scrubbing brush. It's so easy and quick and makes your sandpaper last at least 3 times as long.

ReNew increases sanding machine efficiency . . . paper lasts longer . . . less changes necessary.

ReNew is non-inflammable. Buy it in 55 gallon drums at $2.60 per gallon, 5 gallon steel pails at $2.75 per gallon, or one gallon cans at $3.00 per gallon, F.O.B. Moline, Illinois.

MOLINE PAINT MFG. CO.
MOLINE, ILLINOIS

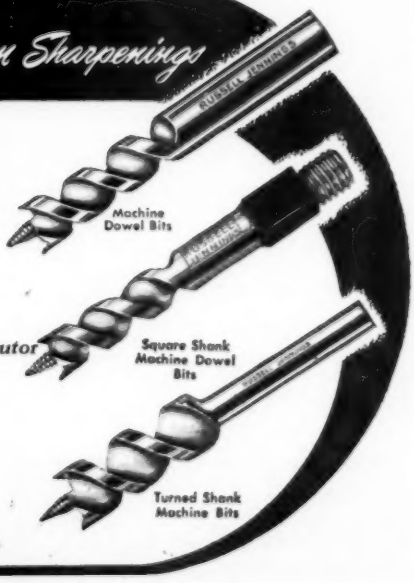
For **MORE HOLES** *between Sharpenings*

LOOK FOR THIS NAME

RUSSELL JENNINGS

ON THE BITS YOU USE

● The special tool steel, made to Russell Jennings' own analysis, gives these bits LONGER EDGE LIFE. For you that means more holes between sharpenings.



Available from your Industrial Supply Distributor

RUSSELL JENNINGS BITS
now part of
STANLEY
Reg. U.S. Pat. Off.
THE TOOL BOX OF THE WORLD
Stanley Tools, 119 Elm St., New Britain Conn.

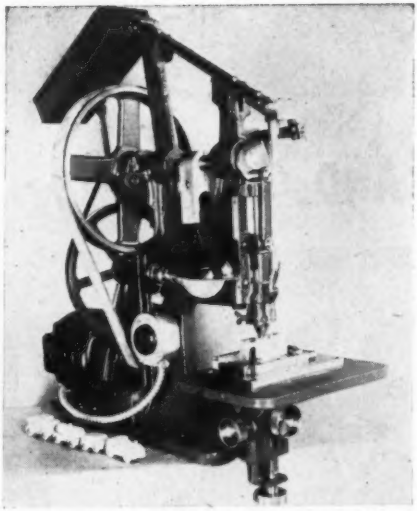
NAILING MACHINE

Hastings Sales Engineering Company has announced a new model Milliken nailing machine designed to automatically feed and drive large head upholstery nails, used by upholsterers and toy manufacturers.

One manufacturer is using this new model A-5 for the assembly of wheels on toy trains, using 5/8" x No. 18 upholstery nails with 1/4" brass heads, as shown in the accompanying photograph. This model has a 6" throat and 2 3/4" table drop.

Other models of the Milliken nailing machine come with 10 1/2" throat and either 2 3/4" table drop or with open front, providing a working space up to 28" in height. Machines can handle different type nails in precision assembly work from 1/4" in length to 1 1/4".

The Millikin nailing machine is a precision assembly machine, rapid and accurate in operation. It often eliminates pre-drilling that has been necessary with hand nailing. Easy adjustments make it possible for the work to be located to receive the nails driven flush, partially driven or counter sunk and driven straight or at an angle as desired.

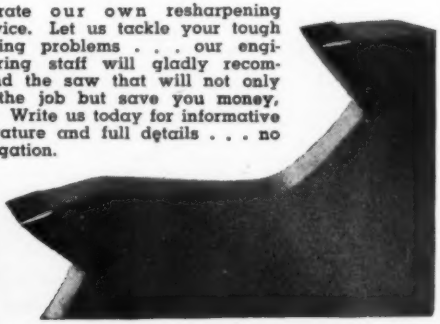


for profitable saw operation

ITS JAEGER-BAUMANN

"The Sawcrafters"

For long saw life . . . for better, faster cutting of wood, metal or plastics, production men are specifying Jaeger-Baumann Carbide Tipped Saws to their purchasing departments. Sharpenings are reduced to a minimum with J-B Saws. Gullet design eliminates vibration and assures strength, stability and quick chip elimination. We also operate our own resharpening service. Let us tackle your tough cutting problems . . . our engineering staff will gladly recommend the saw that will not only do the job but save you money, too. Write us today for informative literature and full details . . . no obligation.



JAEGER-BAUMANN INC.
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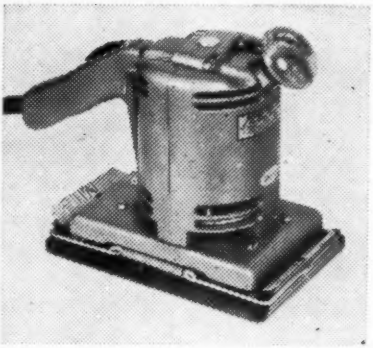
"The house of sawing science"

PRACTICALLY A GIFT!



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Built for production and maintenance sanding, finishing, polishing, and rubbing operations on wood, metal, stone, plastics and composition material.

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USES WET and DRY SHEETS 4½" x 7½"

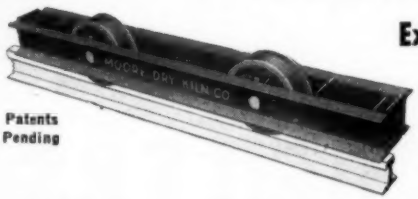
1115 V. 50-60 Cycle, 3450 RPM Motor

PRICE Postpaid anywhere in U.S. **$39.95**

Ball Bearing Construction throughout. No lubrication required.

RUDOLF BASS 173-177 LAFAYETTE ST. NEW YORK 13, N. Y.

The New Moore ROLLWELD Dry Kiln Truck



Patents Pending

Specify Moore "Rollweld" on your next kiln truck order. *Write today for information.*

Extra-Value Features Include:

★ All-welded frame. New "hat" spreader makes frame 500% more rigid.

★ Precision-fitted, ground roller bearings make starting easier under heavy loads.

★ Pressure Lubrication — groove-seated washers retain lubricant.

★ Stronger axles — easy to replace.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

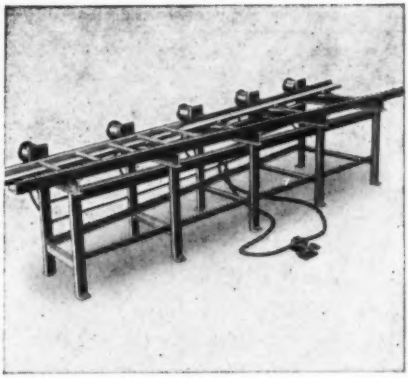
JACKSONVILLE, FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B. C. CANADA · NORTH PORTLAND, OREGON

If you have a production nailing problem, send samples of your nails and details of your requirements to Hastings Sales Engineering Company, Department W-D, 755 Boylston Street, Boston, Massachusetts, for recommendations and quotations.

LADDER ASSEMBLY CLAMP

The Union Tool Corporation announces the design and production of a new type air-operated assembly clamp. This new assembly consists of a sturdily constructed retaining frame (or clamp) and hand- or foot-operated air cylinders. Pressure on the rails may be applied gradually to permit careful preadjustment of rungs to the rung holes. The operation is uniform, fast and positive, pressing the ladder parts firmly into desired position.

The Union Clamp will operate effectively in the assembly of any length ladder up to 14 feet. Clamps for additional length ladders or other such assemblies, as desired, can be obtained simply by adding to the length of the frame and clamp mechanism.



The Union Tool Corporation, Warsaw, Indiana, manufactures a complete line of gluing and glue-mixing equipment. Its products are sold through manufacturers' representatives throughout the United States.

HIGHEST QUALITY — MASS PRODUCTION

WOOD AND AUTOMATIC *Carving Machines* PROFILERS

TOOLS SALSTROM SUPPLIES

CARVING MACHINE COMPANY

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MULTIPLE DRILLING with a . . .

MULTI-DRILL

increases capacity 2 to 8 times!

If your production requires drilling from 2 to 8 holes in a work piece, a MULTI-DRILL will cut costs and speed output up to 800%. The MULTI-DRILL is universally adjustable to any hole pattern—is compactly built to permit easy, unhampered operation with drill jigs or other special fixtures. Regularly built to take the wear and tear of high production work, the MULTI-DRILL will handle your long or short run multiple drilling jobs with ease and economy. MULTI-DRILLS are made in 6 and 8 spindle models and are furnished to fit any drill press.

There is a Commander MULTI-DRILL Distributor in your area. Write for his name, literature and complete details.

COMMANDER MFG. CO.
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Product of *Commander* — Builder of the *Commander Tapper*

MORE SPEED — MORE SUPPORT

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SAVE
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CUT
More Materials in Faster Time
PROTECT
Your Workmen Against Accidents
SPEED-UP
Production on Old or New Machines

PADDOCK BALL-BEARING BAND-SAW GUIDES give strong friction-free support to the working portion of the blade — with ball-bearing wheels running with the blade. Order today — or write for circulars.

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Guide Makers Since 1920
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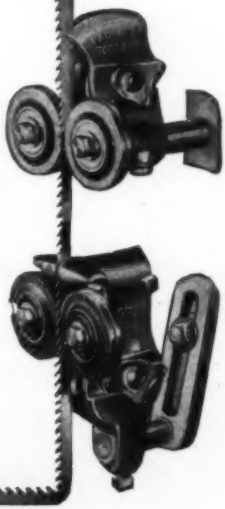
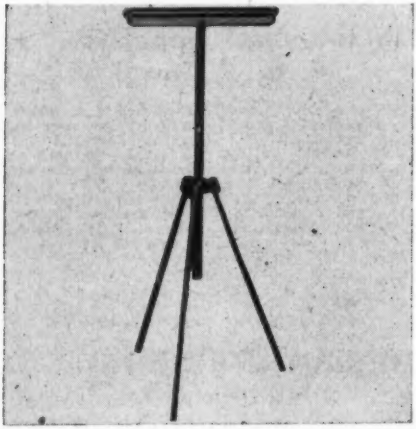


Paddock
BALL-BEARING
BAND SAW GUIDES

ROLLER STANDS

Here is a telescope roller stand which can be used in conjunction with any type of bench or floor model power tool. It can catch and carry away long stock from bench saws, band saws, planers, jointers, etc. It is all-steel, easily assembled and can be raised or lowered. Legs are adjustable for uneven floor surfaces.

Eagle Sales Co., Keene, N. H.



EDGE-BANDING SIMPLIFIED

Illustrated is a method of applying edge-banding to wood fabrications, such as desk tops, coffee table tops, drawer facings and many other fabrications with either straight or curved lines. Incorporating the use of a carbon-free, vulcanized rubber expanding electrode, recently introduced, veneer strips are welded to the fabrication in a matter of seconds with power supplied by a Woodwelder generator.

Air pressure is applied to a 4" fire hose and to the expanding electrode forcing the edge-banding veneer against the plywood edge long enough for the high-frequency energy to effect

TURNER

BAND RESAWS AND BAND RIPSAWS

FAST FEED — HEAVY DUTY — CLOSE COUPLED — RUGGEDLY BUILT

42", 48", 52" and 62"; Tilting Vertical Singles, Standard and Beveler Tandem Twins, Horizontals.

PROMPT DELIVERY MOST MODELS
INTERNATIONAL SALES & SERVICE

Pacific Coast from San Francisco Plant

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Norment and Lambert, Inc., Lenoir, N. C.
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Anderson-Morrison Machinery Co., Boston, Mass.
J. Lee Hackett Co., Detroit, Mich.
O'Leary & Flynn, Chicago, Ill.
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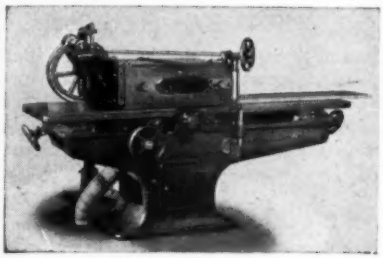
TURNER MACHINERY COMPANY
DIVISION OF UNITED ENGINEERING COMPANY
500 BEALE STREET, SAN FRANCISCO 5, CALIFORNIA



POWER FEED

straightens crooked and winding stock same as hand feed. For any make and size of hand jointer.

Nels J. Billstrom Inc.

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HERE IT IS!

A Dependable, Inexpensive Addition to Your Material Handling Equipment.

LIFT TRUCK JACK & PLATFORM

The lowest price combination available in semi-mobile factory or shop handling equipment. You can't beat it for semi-heavy work or convenience. Equipped with steel or rubber wheels.

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TO FIT YOUR BORINGS

Screw Hole Plugs and Buttons

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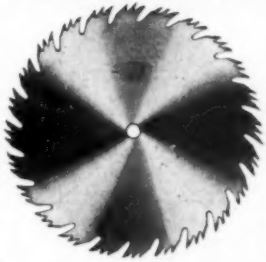


No. 52 Combination Saw

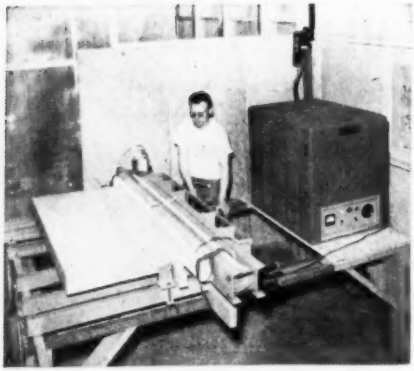
HIGHEST QUALITY SAW BLADES

Excellent for all Radial Saws. Perfectly Balanced and Tensioned for High Speed.

Made from 10" to 24" Dia.

Write for Detailed Catalog

THE F. HEINEMANN SAW & MFG. CO.
CANTON 6, OHIO



a complete cure. The use of one or more HD tuning rings can be employed to aid in tuning the electrode circuit to the proper frequency. The use of the carbon-free electrode permits the edge-banding of odd-shaped edges of all size and description, it is claimed.

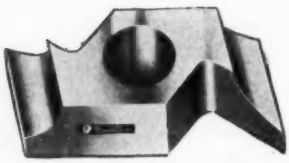
The complete assembly was designed and constructed by Woodwelding, Inc., Burbank, California, for a furniture manufacturer desiring speedy application of veneer to reduce production cost and improve the quality of his product. A similar assembly jig can be constructed to edge-band two edges simultaneously.

KNIFE GRINDING ATTACHMENT

A new profile knife grinding attachment for use with the Redco precision grinder has been developed by the Redco Tool Division of the Red Lion Cabinet Company. This profiler enables any woodworking plant to both make and sharpen high speed steel or cemented carbide profile knives for shapers, moulders, automatic lathes and other similar operations right in its own shop.

The Redco profile grinder, it is claimed, practically eliminates the element of human skill previously required to make and maintain precision knives ca-

Marathon



LOG AND BAND RESAWS . . .
Marathon High Speed Steel Knives are made in any length, width, or thickness. They have the proper degree of hardness to insure a sharp clean cutting edge that will not chip or turn over.

CUTTING SPECIALTIES . . . .
Marathon High Speed Steel Wing-cutters are precision ground and balanced. Wing-cutters can be made with either 2, 3, 4, or 6 wings, any size, diameter, width or form desired.

Territories available to qualified distributors.

F. M. SLATER SAW COMPANY INC.
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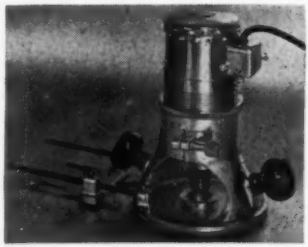


THE HURRICANE MODEL J-6

1¼ HP Portable Router, Immediate delivery

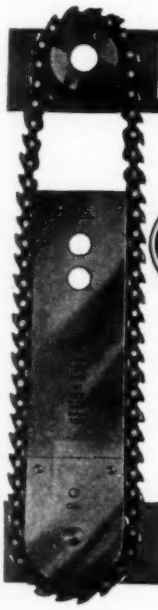
$124.50 F.O.B. Chicago

Universal 110 volt AC-DC, 1¼ HP, Speed 18000 RPM Motor. Switch conveniently located. Air cooled—New Departure sealed ball bearings.

Outer housing high finished. Threaded and fitted with adjusting ring, allowing perfect depth control.

One ⅝" Template guide furnished, various lengths and diameters can be made on request.

Hurricane Machine Wks. 6316 Wentworth Ave. Chicago 21, Ill.



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SINCE 1880

Many profit making improvements which you must test to appreciate.

NEW ENGLAND'S WOODWORKING MACHINERY DEPOT

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Standard sizes 24" x 48"—30" x 48"—30" x 60". Special sizes and styles to order—capacities up to 7500 lbs.

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"C" Clamps
Openings
¾ in. to 18 in.

Quick Clamps
Openings 4 in. to 5 ft.

● Hargrave Clamps have been constantly improved with the aid of skilled mechanics to offer greater operating advantages and increased durability. Individually tested, they must be stronger, tougher and flaw-free. Made in openings from ¾ in. to 12 ft., from ½ in. to 16 in. deep.

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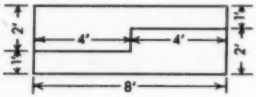
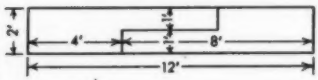
HARGRAVE
Tested Tools
THE CINCINNATI TOOL COMPANY

ANSWER TO PUZZLE ON PAGE 107

Here's how he cut the board . . .



to fill the hole . . .



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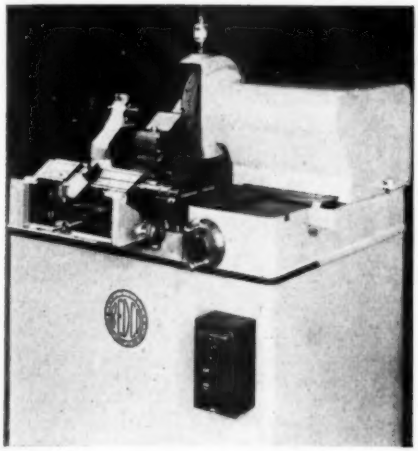
GENERAL MANAGER
SIXTH AND SPRING, LOS ANGELES



pable of producing uniform results.

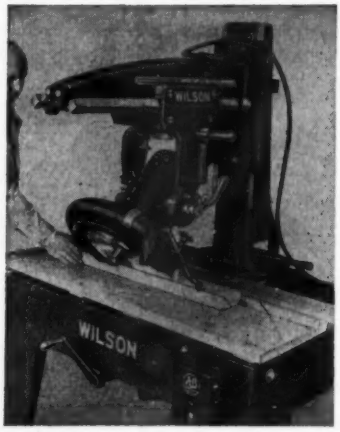
Using a thin template made to the contour of the finished piece of moulding, the Redco profiler will make any number of precision knives. Built into the machine is a means of compensating for the cutting angle in order to produce a knife which will give the required contour to the finished piece of moulding.

For additional information, write to Redco Tool Division, Red Lion Cabinet Company, Red Lion 9, Pa.

DRY KILN DOORS

A new light weight all-aluminum dry kiln door, said to be easier and faster to handle, is offered by Universal Door Carrier, Inc. Though extremely light in weight, the door is strong, rigid, and durable because of its sturdy aluminum-angle frame and completely welded and riveted assembly. Imperfect closures commonly due to sagged, warped, or split doors are eliminated, it is claimed. There are no nails, screws or bolts to work loose, and painting is not required.

The door is made from standard—dimension panels—permitting "custom fit" for any kiln opening, but having the advantage of mass-production economies in manufacture.



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MAKE YOUR *"PILE OF STOCK"*
Pay EXTRA Dividends with a
STURDY, SPEEDY, ACCURATE
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For further Information write to

MEDIA MACHINE WORKS,
INC.
MEDIA, PENNSYLVANIA, U.S.A.
Est. 1922

Both light weight and heavy duty doors are fully insulated and vapor-sealed for money-saving conservation of heat and steam and improved uniformity of cure throughout the kiln.

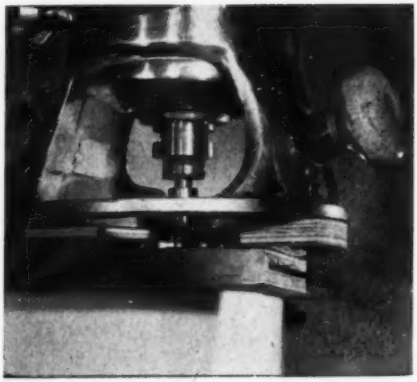
For illustrated folder, write Universal Door Carrier, Inc., 1117 Cornell Ave., Indianapolis, Ind.

NEW PACKAGING

Behr-Manning (Division of Norton Company) Troy, New York, has completed new "Service Packaging" of its Norton sharpening stone line. Prompted and assisted by distributors and consumers, and developed through extensive market research, the new packaging is a welcome service contribution to rehandlers and consumers alike.

NEW ROUTER SAW

Here is a solution to the problem of trimming the overhanging edges and glue from laminated plastic edging strips laid-up on plywood cores in the



manufacture of table tops, bars, cabinets, etc. Replacing the old method of hand planing and filing, the new Woodsman carbide tipped flush trim saw sweeps across the surface of the core, cutting in one pass and leveling the core to take the top sheet.

For complete details write North American Products Company, 3100 W. Cherry Street, Milwaukee 8, Wis.

ACE *Portable Blower*

Cleans-Fast-Safe and at less cost!

Cleans motors, planers, all machines fast. Prevents over heating and reduces fire hazards. Four handy models operate from any socket. Write for details and

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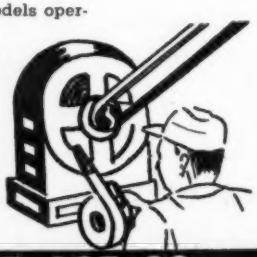

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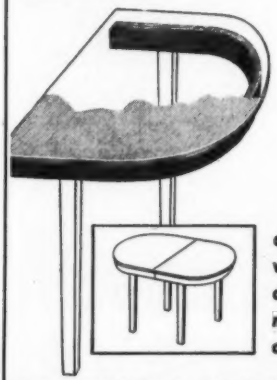
molded plywood

Table aprons and chair rims — faced in all popular woods. Stock molds for standard sizes on hand. Now supplying largest manufacturers.



also faced with decorative metals or plastics

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Style 16: Single Bar Clamps. Light yet strong. Versatile. Quick adjusting, self locking.

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Hand Screws: Hard seasoned maple jaws. Extra heavy steel ferrules.

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IMPROVED Ball Bearing Shaper Collars

Friction between collar and pattern entirely eliminated — no more burning.

Outer rim is independent of the slotted collar and revolves with the feed of the work.

Collars can also be supplied without grooves for use with solid steel cutters.

Give diameter of collar and size of hole.

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BAND SAWS

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SUPREME BAND SAWS cut faster . . . have increased cutting capacity with minimum breakage! Present day high speed equipment demands Supreme Saws. Free from kinks and imperfections. Made from the finest Special Nickel Alloy Steels, tempered for toughness . . . to stay sharp! There is a Supreme Band Saw for every industry . . . for every material. Special purpose saws are made to order.

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Precision Cutters

- Miters door, furniture trim; sash, screen, frames, casket work.
- Finest machining and fitting throughout.
- Gauge Stops for production runs.

Bench Model, $59.50; cuts 1¾" moulding. Foot powered model, $123.40; cuts 2¼" wide. Leaves hands free for aligning work.

Write for full Information.

Also, Lion Trimmer for finish trimming to any angle, $51.75. All prices F.O.B. Stratford.

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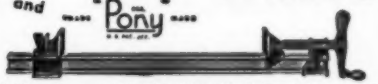

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For Rapidly Testing Wood And Veneer By The Most Reliable Method Yet Devised

Most accurate and versatile meter made.
INSTANTLY INTERCHANGEABLE ELECTRODES, BOTH POINT AND SURFACE TYPES

Wood in all shapes, sizes; smooth, rough; flat, curved; thinnest veneer and heavy timbers — all tested with same meter.

Moisture gradients quickly detected and determined without cutting.

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FAST • ACCURATE • FAST

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A new economy line of fulcrum action FF Glue Guns:

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This new line of guns plus a small one gallon tank supplement the regular FF line, allowing the consumer to buy FF quality, ease, and accuracy at an economy price.

Desired Economy — Demanded Quality

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98 HOURS WAS THE AVERAGE TIME A HAND WORKER TOOK IN THE 1850'S TO MAKE A RIFLE BARREL.
ENGLAND'S GREATEST MACHINIST — HENRY MAUDSLAY — NEVER SERVED A REGULAR APPRENTICESHIP! HE EARNED HIS RIGHT TO WORK AS A REGULAR HAND IN BRAMAH'S SHOP IN THE LATE 1700'S BY TRUING UP AN OLD, BROKEN-DOWN VISE BENCH IN A SINGLE DAY'S TIME.

This
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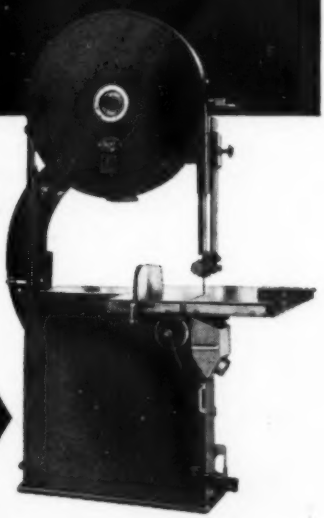
Expert Patternmaker

...and his Moak High Speed Band Saw

This patternmaker turns out precision panels . . . at high speed . . . with little effort. How? By a combination of two things: his skill, and the steady, accurate cutting of his Moak High Speed Band Saw.

***Flash!* NOW "Lubricated for Life"**



New two-wheel equalized brakes **shut off motor and stop wheels automatically if blade breaks. One-piece cast frame reduces vibration—aids accurate work. Table tilts 5° left, 45° right. And a feature every operator likes: he can adjust every control without moving from his tracks. SAWS WOOD, SHEET METAL, METAL ALLOYS, PLASTICS.**

Write for your Moak Band Saw manual today.

MOAK MACHINE & TOOL CO.
MOAK
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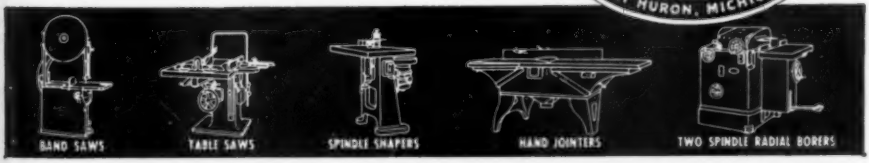

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No. 283B

Vertical Single Spindle Borer

with assortment of bits

Only $610

F.O.B. Chicago

- Ball Bearing
- Direct Drive with two-speed spindle motor.

Phone, write or wire

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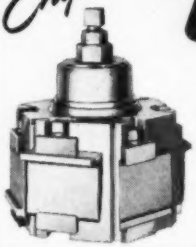
565 West Washington Blvd., Chicago 6, Ill.

SHIMER *Engineered for Production*

EASED EDGE HEAD



for clean, fast, low-cost

- EASED EDGING
- MATCHING
- PLAIN JOINTING
- SIDING
- SHIPLAP

Here is a ruggedly built cutter head designed for extreme long service under the severest cutting conditions, yet a head that can't be surpassed for ease in adjusting, accuracy in pattern cutting and versatility of use! Six-bit model (pictured) and four-bit model both equipped with self-centering feature and clearance-protected, milled-to-pattern bits that hold their pattern permanently!

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SAMUEL J. SHIMER & SONS, Inc.
85 RACE STREET • MILTON, PENNA.

Nutting's 59th Year

Fig. A

A NUTTING VETERAN

A husky, long lived truck at a low price. Semi-steel running gear — 13½" diam. main wheels that roll easily—6½" casters that really swivel. Northern hardwood, rigid frame, platform 15" above floor. Platform sizes 27 x 48, 27 x 54, 30 x 60.

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Nutting Truck & Caster Co.
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MORTISE CHAIN

BARS AND SPROCKETS

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Main Office and Factory

U. S. CUTTING CHAIN MFG. CO.

95 SPARK ST. BROCKTON 64, MASS.

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FOR SERVICE
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FOR USED AND REBUILT EQUIPMENT

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Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of $7.00 for name and address and a five line advertisement. For additional lines, only 70c per line.

DISPLAY ADVERTISEMENTS: 1 inch (Minimum), $8.00; 2 inches $16.00; 3 inches (Maximum), $23.00.

Write directly to those offering the machine for sale, for prices and full descriptions. If what you seek is not advertised, write Hitchcock Publishing Company, 222 E. Willow Ave., Wheaton, Ill., making known your wants on either new or used machinery and the publisher will gladly assist you.

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STANDARD OF COMPARISON
THE "HART" LINE

Largest stock of used machinery in America, many ball-bearing, motorized. Substantial savings. Prompt shipment. Write for our list. We equip plants completely. We also buy complete plants or individual machines.

Earle Hart Woodworking Machine Co.
565 W. Washington Blvd., Chicago 6, Ill.
Phone RAndolph 6-4970

FOR SALE

Clifton Machinery Co.
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Saw Dust and Shavings Mill Exhausters and Blowers—Hundreds in stock, sizes to suit any need, Also Air Compressors, Fans, Rotary Blowers. Money Savers—Send Specifications.

All machines rebuilt and fully guaranteed.

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Victor Peterzell & Co.
5933 Catharine St.-W Phila. 43, Pa.

Moulder, American, no. 1 6", motor
Planer-matcher, 14"x6", Woods, b.d.
Planer-matcher, 12"x6", Woods 40 HP. motor
Radial Saw, 5 HP DeWalt, 3-60-220
Ripsaw, chain feed American No. 15, dmd, 15 HP

FOR SALE

American Machinery Exchange
2040 — 2044 W. Lake St. Chicago, Ill.

Moulders, sanders, self-feed rip saws, band rips, routers, glue jointers, saw tables, planers, and many other items of new and used machinery. Send us you. inquiry.

FOR SALE

Woodworkers' Tool Works
220 S. Jefferson St., Chicago 6, Illinois

Boring machines, single vertical motor driven
Chucking machines
End clamps, Handy, jaw 3½" high
Hand Hole Machines
Jointers, 4—6"—12"—24".
Lock corner machines
Planer, Whitney 30" double, with new ball bearing in top and bottom heads, sectional double infeed rolls, flexible chip breakers, motor driven, Vee belt drive.
Planer, American No. 444, 30", motor driven, ball bearing, round head, sectional feed and chip breaker, grinding attachment
Planers, Belsaw 12", ball bearing
Relishers, Door and Sash
Rip Saws, Self Feed and Gang, new.
Routers, Portable, Floor Type and Stair
Sander, Mattison No. 427, hand block
Sanders, Pneumatic and Brush
Saw franking machine
Saw, Chain Feed Rip Defiance
Saw, Cut off, Double end, Chgo. No. 12
Saws, band, all sizes
Saws, Scroll, Ceiling and Self Contained
Saws, swing, self contained
Saws, Radial Arm
Shaper, Whitney Double No. 39-A motors on arbors
Tenoner, Hall & Brown, single, roller table
Window Frame Machines.
Wood Trimmers, all sizes.

FOR SALE

L. R. Kenner
3325 Trinity Road Louisville 6, Ky.

Boring machine, Towsley 2-spdl. hor. m.d.
Cut-off saw, Bell No. 216 str. line.
Dovetailer, rebuilt Dodds 15-spdl., motor dr.
Grinder, Woods No. 227-M cutterhead, motor dr.
Sander, 60" Smith 2-dr. ball brg. m.d.
Sander, 8' Mattison No. 124 double belt auto. stroke, m.d., practically new.
Sander, 40" Nash, No. 77 2-spdl. auto. turning
Veneer redrier, 36x72" Merritt 3-plate, m.d.

USED AND REBUILT MACHINERY
FOR SALE
S. W. Harrington Inc.

P. O. Box 230 **Ashville, N. C.**

Air Compressors, various sizes
Band Saw, New Crescent 26" bb. dmd.
Band Saws, Amer. B-36 36" bb. dmd.
Band Saws, New Moak 36" bb. dmd.
Borer, Amer. 2 spindle radial dmd.
Borer, Root 2 spindle horiz. dmd.
Borers, F&E No. 312 3 spindle vert. pb. bd.
Clamp, Taylor, 40 sect. 4 clamps
Dovetailer, Dodds 20 spindle BD.
Dowel Driver & Gluer, Bell No. 8 dmd.
Head Grinder, Berlin No. 137 md.
Head Grinder, Mattison No. 231, dmd.
Jointers, New Moak 12", bb. dmd.
Lathe, Mattison 57D bb. & motor
Mortiser, Sidney, single spindle pb. bd.
Mortiser, W & M No. 285—5 spdle. horiz. dmd.
Mortiser, W & M No. 288—6 spdle. horiz. dmd.
Moulder, Yates C88—8" bb. dmd.
Planer, Buss 44" Sgl. bb. dmd.
Planer, Fay 30" sq. hd. pb. bd.
Planer, Whitney 44" single rd. hd. bb. dmd.
Planers, Woods No. 450—30" dbl. pb. bd. & motor
Planers, new Crescent 24" bb. dmd.
Planers, F&E 30" sec. roll rd. head vee-belt & mtr.
Router, Ekstrom-Carson dmd. No. 236
Sander, Berlin, 31" 3 drum, roll feed bd.
Sander, Mattison No. 134, pb. bd.
Sander, Mattison No. 177 edge belt dmd.
Sander, New Jefferson, hand block, bb. dmd.
Sander, Smith 49" 3 drum endless bed, bd. with motors
Sander, Vonnegut, pneumatic bb. dmd.
Sanders, Columbia 3 drum roll feed, vee-belt, motor drive
Sanders, F & E 60" 3 drum roll feed, dmd.
Sanders, Nash No. 25—10 spdle. dmd.
Sanders, Nash No. 40—6 spdle. dmd.
Sanders, Yates-Amer. No. 413—2 drums 49" endless dmd.
Saw, Beach dbl./cutoff, pb. bd. & Motor
Saws, Amer. No. 9 Tilt arbor bb. dmd.
Saws, Jenkins 105—dbl. cutoff, bb. dmd.
Saws, Mattison No. 207 str. line, bb. dmd.
Saws, variety Y & F, tilt table pb. bd.
Shaper, Buss No. 9 double, bb. dmd.
Shapers, Defiance dbl. spdle bb. dmd.
Shaper, Greenlee No. 180 dbl. spdle. dmd.
Shapers, Beach single spindle, bb. dmd.
Shapers, New Moak single spindle, bb. dmd.
Shapers Whitney, dbl. spdle. bb. dmd.
Sticker, F & E Sash, pb. v-belt & motor
Sticker, sash & door, Hayes-plowing & boring attachment, bd.
Taping machines, Dennis No. 2
Tenon Heads, single & double end.
Tenoner, Greenlee No. 530 sgl. end with copes, bb. & motor
Veneer Jointer, Jenkins, saw pb. bd.
Veneer Press, Black Bros. 4' x 7'
Woodworker, Crescent pb. bd.
Many other items, send your inquiries.

FOR SALE
Woodward Machinery Co.

309 E. Second St. **Cincinnati 2, Ohio**

Band saw, 14 in., heavy duty, new, $75
Band saw, Silver, 32 in. tilt, $150
Blower, Buffalo, 30" slow speed, $85
Brazing clamp, 4 in. band saw, $15
End Matcher, Sherman, for flooring, $600
Jointer, 6 in., rd. head, bench BB, nearly new, $65
Jointers, 12 and 16 in. rd. head, $175
Knife Grinder, Rogers, 26 in. automatic, $125
Lathe, Waymouth, novelty variety, $125
Lathe, P & B, automatic variety, $250
Mortiser, Greenlee, ver. HC, with motor, $225
Mortiser, new light, hollow chisel, $100
Moulder, F & E, 7 in., 4 side, $550
Planer, Dennis, 30x6 sgl. cabinet heavy, $450
Resaw, Cordesman, 30 in. BB, circular, $550
Sander, Variety and handle, Mattison 111, $100
Sander, Peerless, 15 in. surface belt, $125
Saw, Yates, No. 229, 11 ft. auto. dbl., $550
Saw, Walker-Turner, heavy duty, radial, $300
Saw, Table, 10", BB tilt, $60
Sticker, Smith, 6 in. sgl. Sash and door, $300
Swing saws, motor driven, $125

FOR SALE
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Phone Mu. 7483

Double Shaper—Advance Machinery Company
Moulder—Yates C-4A, 8"—BMD
Rip Saw—Yates G-2, BD
Sash Clamp—Fay & Egan

FOR SALE
David V. Lundberg
1602 Jackson St. **Rockford, Ill.**

Dowel Machine, No. 2 Hawker, motor driven.
Dowel Cutter & Pointer, motor driven
End matcher, (2) Stetson Ross, new
Lathe, Mattison 57D, 42" ball bearing, 10 h.p.m.
Moulder, Hermance 10", belt driven, wtih slip-on heads, 20 HP GE motor

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Shefrin Sales Company
"The Woodworkers' Machinery House"
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Phone Baltimore 0074

Chain saw, Reed-Prentice, pneumatic timber hog, new .....$ 250.00
Jointer, 20" Porter, sq. hd. babbitt brg. ....$ 225.00
Planer, Oliver 24" bl. brg. 5 HP DMD, knife grinding and jointing attachment $1425.00
Sander, spindle, Onsrud 2 HP 3 ph. .....$ 225.00
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Greenlee No. 228 vertical automatic H.S., m.d.
American No. 20 Hollow-chisel, m.d.
Whitney No. 67 Oscillatig bit, dir. m.d.

MOULDERS
Newman 4-in. ball bearing, all electric
Rowley-Hermance 6-in., coupled motor drive.
Mattison No. 226, 12-in., all electric
Vonnegut 12-in. electric and freq. chgr.
Smith 8-in. drop bed, V-belt, m.d.
Amer. No. 35, 10-in., elec., with freq. changer

PLANERS
Yates No. 156 20-in. rd. hd., m.d.
Oliver No. 299D 24" sgle. bb DMD
Porter No. 401 24" round head, BB D.M.D.
Whitney 30" single BB M.D.
Buss 36-in. single, ball bearing, motor drive
Berlin No. 177 30-in. b.b. belt dr.
Oliver No. 61, 24-in. single Motor Dr.
Buss 26" & 30", dingle B.B., M.D.

ROUTERS
Carter Type TR—Porter No. 600—Ekstrom-Carlson No. 24—Onsrud Type A4RR 2-spindle radial—M.D.

SHAPERS
Oliver No. 285, single BB M.D.
Whitney No. 165, S.S. motor on arbor
Whitney No. 182, sgl., D. M.D., 56x40" table
Porter No. 206 SCD double, short belted, m.d.
Whitney No. 134 double-spindle, dir. M.D.
Amer. No. 20 dbl.-spdl. dir. M.D. freq. changer
Sidney double b-b short belted M.D.
Fay & Egan dbl.-spindle belted M.D.
Advance double-spindle, BB M.D.
Moak No. 7 single, B.B., M.D.

SANDERS
Fay & Egan 30" 3-drum roll-feed.
Smith 43" 3-drum endless-bed M.D.
Yates No. 401 43" 3-drum roll feed.
Buss-2-spindle vertical, oscillating belt drive
Duplex moulding sander.
Wysong & Miles No. 164 universal belt, m.d.
Mattison No. 124, 6-ft. auto. stroke M.D.

MITRE SAWS
Greenlee No. 495 S. Tilt arbor, rolling table
American 12-in. tilting arbor, moter-drive
Sidney No. 16A T.T., D.M.D. rolling table set.

CUT-OFF SAWS
Monarch X 36A radial arm, D.M.D.
Beach box makers cut-off, dir. M.D.
Multiplex No. 40A radial arm, 1½ h.p.
Porter Style D 6' swing, motor-on-arbor
Fay & Egan No. 306 butting saw
Greenlee No. 451 auto. cut-off and dado
Buss double cabinet type, moter-drive
Fay & Egan No. 281 Chain-Feed, dbl., B.D., max. 6'6"

RIP SAWS
Yates G77 chain-feed, D.M.D.
Mattison No. 207 chain-feed, motor drive
Smith No. 335A self-feed, belt or motor-drive.
American No. 1 self-feed, moter-on-arbor.
Clement hand-feed, belt or motor drive
Yates G-2 chain feed, M.D.

TENONERS
Greenlee No. 534, Single end wth cut-off, no copes, dir. m.d.
Smith No. 225CE single-end with copes.
Houston single-end with copes, rolling table
Wilkin-Challoner No. 70 90x48 in. double end, electric

This is only a partial list — Send or call your inquiries

1965 E. Milwaukee Detroit 11, Michigan

Telephone TRinity 2-6442

BANDSAWS

Tannewitz 36" DMD 32" under guide
36" American, Tannewitz, Crescent, Oliver
27" Crescent Band Saw
20" Crescent, M.D.
Yates, V40, 48" B.B. Angle Bandsaw
Northfield BB & DMD, 20" to 36"

BORERS

Andrews Multiple vertical
Horizontal—2 Spindles—Various makes

DOVETAILERS

Dodds 10, 15, 20 spindle

JOINTERS

American 12" Wedge Bed, BB
American 16" Wedge Bed, BB

LATHES

Oliver No. 20 BB CMD patternmakers

MORTISERS

Wysong & Miles 5 Sp. Horizontal. B.D.
New Britain No. 3
New Britain No. 7.

NAILERS

Morgan 6 track closed back
Morgan 12 track open back

PLANERS

Amer. No. 4½ 27" sec. feed roll, sec. chip & Joint Attach.
Crescent P24 BBMD grinding attachment
Greenlee No. 110 DMD BB Grinding Attach.
Whitney No. 32, 40", DMD

RIPSAWS

Fay & Egan 30" dbl. No. 140 4-knife Rd. hd.
New Beisaw 7½ HP Multiple Model 840
12" Colloday L. Powers, HB Smith, Crescent Sidney
G-77 Yates BB DMD, Motor Feed

SANDERS

10" Peerless Horizontal BB
10" Porter Cable B 3 MD
Nash No. 10—54"
Peerless Horizontal 14" - 20" - 26"
43" 2-Drum Endless bed, BB MD No. 399 Fay & Egan
W & M Underbelt DMD
Yates American Underbelt DMD
Porter Cable 15" disc DMD
Porter Cable Wet BG 8 MD
Peerless 14" vertical, belt, BB

SAWS

American No. 10 Model 3 DMD
Beach Tilt arbor DMD
DeWalt radial saw 3 and 5 HP
Fay & Egan BB Tilt Top
Tidey Saw Tbl. VBD with Rolling Carriage
Walker Turner, Wallace, Yates Amer., Tannewitz, etc. in medium sizes
Whitney 177, DMD, tilt, Arbor

SHAPERS

L. Powers Single BB—M.D.
Union Single Spindle, BB, MMBD
Defiance Double Spindle, DMD with tilting & Sliding heads
Whitney, No. 102 Automatic Shaper
Yates N1 DMD, w/Freq.

TENONERS

McKeage New Sgl. end T & B copes 3 mtrs.
Fay & Egan, No. 70 Single End

MISCELLANEOUS

American dowel machine BB
Covel-Hatchett Band resaw grinder MD
Metal working lathes, presses & power shears
Morgan Box Board matcher
DeWalt Timber Cutter, 10 H.P.
Porter 43C Str. Line Cut Off Saw, L. or R.
Chicago Riveting Machines, Style No. 90

NEW MACHINERY

Door Clamp, Williamsport Amer.
12" Tilt arbor, Darro-James
Combination 20th Century Cresson Morris
Taylor Clamp Carrier, 60 Section, 6' 6"
H & A swingsaws No. 5—No. 25—No. 55
American single borers DMD
American Single Shapers BB MM S-30
McCartney High Speed BB Single Shaper
Model No. 1000 Single Spindle Shapers
Grinders—from ¼ HP to 5 HP bench and floor model DMD
Buffers 1-2-3-5 HP DMD
Drill presses No. 15, 18 Buffalo bench and floor models
Electric drills, Hand Power Saws
DeWalt Radial Saws, ½ HP to 7½ HP
Northfield No. 1 tilt top saw tables
Northfield No. 4 tilt arbor saw tables
8" to 16" BB Jointers
20" to 36" BB fully guarded bandsaws
24" BB planers, single MD
Metal working lathes, presses & power shears and brakes.
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Endless canvas belts, large variety of lengths and widths, also sand belts for Skilsaw, Porter Cable and Vonnegut brush sanders. Accessories and supplies, tremendous lot both new and used. Also band and resaw blades.

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PARTIAL LIST

BORERS

No. 95 Andrew horizontal.
No. 371 Greenlee mult.-spdl. 6-ft vert.

CLAMPS

No. 80 Taylor 10-ft., 12-section wheel type carrier.
Taylor 6½-ft., 30 sec. caterpillar type

DOVETAILER

Dodds 15-spindle.

JOINTERS

Hand jointers, 12 to 24-in.
Chain-feed, Meyers, Fay Egan, Diehl, and Jenkins.
Jenkins saw type veneer jointers, ball-bearing, 6 and 8-ft.

LATHES

No. 600 Imperial ball-bearing, direct m-dr. automatic turning.
No. 57-D Mattison ball-bearing, motor-driven automatic turning.

MOULDERS

No. C-89 Yates, 10-in. ball-bearing, direct motor-drive.
American 4-in. babbitt-bear. belt-drive.
Fay & Egan 7-in. ball-bearing, 4-head.
Hermance 16-in. 4-hd with 20-h.p. motor.

NAILER

Doig 36-in. closed back, 13-track.

PLANERS

No. 177 Yates 30-in. double roughing.
Buss 30, 36 and 44-in. single.
Whitney 30 and 36-in. sgle., 30-in. dbl.

ROUTERS

No. W-240 Onsrud two-speed with S-175 automatic shaping attachment.
No. W-180 Onsrud.

SANDERS

No. 10 Nash 6-spindle, No. 25 10-spindle.
No. 171 Wysong & Miles moulding.
53-in. American 3-drum roll-feed.
Yates 3-drum endless-bed, 43 and 49-in.

SAWS

No. 75 Diehl chain-feed rip saw, 15-h.p. on arbor.
6 and 7-ft. Buss and Hall & Brown hand-feed double cut-off.
No. 312 Yates 44-in. hand rip. chain-fd.
No. 207 Mattison chain-feed rip.
Yates G-2 chain-fd, ball-brg., v-belt dr.
American and Oliver tilting-arbor miter.
No. 173-A Oliver jig.
New Nos. 30 & 40 Multiplex radial arm.

SHAPERS

Buss and Whitney double-spindle.
No. 155 Porter dbl. end serpentine (hor.)

TENONERS

Fay & Egan single end.
Eaglesfield saw type ball-bearing.

MISCELLANEOUS

No. 928 Covel-Hanchett automatic circular saw sharpener.
No. 300 Francis flat plate edge gluer
6, 8 & 12-plate Merritt redriers. (new).
Nos. 7 and 8 Bell dowel drivers and gluers, motor-drive.
Francis 30x72-in. hyd. veneer press.
Hooper chain-fd. two-color printer, 23x42
Salstrom 24-spindle multiple carver.

SPECIALS FOR THIS MONTH

Rebuilt Bell No. 12C double mitre and cut-off saw.
Rebuilt Buss double ball-bearing planer.

MONICAL MACHINERY COMPANY

260 W. LEONARD STREET, N.W. **GRAND RAPIDS, MICHIGAN**

MODERNIZED & REBUILT

BORERS: 2 spindle radial, 1 to 10", 1 to 18" capacity, motorized.
CLAMPS: Bell Air Operated, high jaw, drawer, 48" capacity, new
Handy, High Jaw, Drawer, 64" capacity
CLAMP CARRIERS: Billstrom 29-section, 6' 6" capacity
Taylor 30 section; 6' 6" cap., air operated
Billstrom 39 section, 7' 6" capacity
FACERS: Herzog 20" Feeder, motor driven, ball bearing, 4-knife rd. hd. jointer, di. coupled dr.
Herzog 30" feeder, mtr. driven, ball brg., power hoist, direct motor driven jointer
Smith 24" Feeder, motor driven, with ball bearing 4 knife rd. hd. jointer, direct coupled dr.
LATHES: Mattison No. 57-D Auto. Turning, M.D.
Smith B-42 B.B. automatic Turning Lathe, M.D.
PLANERS: Dennis 26"x7" Single, Cabinet, plain bearing, 4-knife round hd., V belt motorized
Sidney 24"x8" single, ballbearing, direct motor driven
REDRIER: Merritt 36"x72", 6-plate, motor driven
SANDERS: Yates S-2, Osc. Edge Belt, Motorized
Wysong & Miles No. 274 Combination Horizontal & Vertical Edge Belt, motor driven
SAWS: Tannewitz Type RH, 42" Band Saw, d.m.d.
Crescent 36" band saw, D.M.D.
Bell No. 216 Swing Cut-off Saw, direct motor driven, with two 10' roller tables
Buss Variety Saw, tilting table, B.B. direct motor driven
F & E No. 999 Straight Line Rip Saw, direct motor driven, with separate feed motor
Diehl No. 44 Straight Line Rip Saw, direct motor driven, with separate feed motor
Diehl No. 75 Straight Line Rip Saw, direct motor driven, with separate feed motor
Porter C-43 cut off saw, direct motor driven
SHAPERS: Sidney Single Spindle, ball bearing, motorized
Buss 2-spindle, ball bearing, motorized
1—Onsrud W-122 automatic shaper, ball bearing, direct motor drive, with 15 K.W. freq. changer
Onsrud W 226 Buck Shaper, B.B. Direct motor driven
Sidney 2 Spindle, Ball bearing, motorized
Smith 2-spindle, ball bearing, motorized
TENONER: Hermance No. 2, upper and lower cope heads, direct coupled drive

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REBUILT AND USED MACHINES

BAND SAWS
Tannewitz GH 36", D.M.D.
American B-36, 36"
Tannewitz R-42, D.M.D.
Jones-Superior No. 155, 42", M.D.
BORERS
Root "CH" 6' Hyd. Univ. Multiple
Fay & Egan No. 312, 42" Vert. Multiple
Towsley 2 Sp. Horiz., Radial
Root "GM" Vert., Single Spdl.
CLAMPS
Bell 70-B Air Door Clamp
Lancaster No. 400B Air Frame Clamp
Lancaster No. 500 Air End Clamp
CLAMP CARRIERS
Taylor 6½', 30-Section
Taylor 10', 60-Section, No. 80
DOVETAILER
Dodds 12-Spindle, spiral gear
FANS
Sturtevant 50" Single
GLUERS
Bell 72" Plate Edge Gluer
Francis 8" Gluing Machine
JOINTERS
6", 8", 12", 16", 20" sizes
Porter No. 300 CM 24" D.M.D.
Diehl No. 60 Continuous Feed Glue
LATHES
Mattison No. 57-D 42" Auto.
Reed 16" Turning Lathe, 16" Swing
MORTISERS
Y-A 140 Hollow Chisel
Crescent Vert. Motor driven
Loeffler No. 610 Hi-Speed
Wysong & Miles No. 181, 6-Spindle
American No. 10 Sash Mortiser & Relisher
New Britain No. 2 Chain Saw
MOULDERS
Woods 2½" Electric No. 807M4
American 6" and 8" 4-Side
Amer. No. 1, 4" Single Head
NAILING MACHINE
Morgan 12-Track
PLANERS
24", 30", and 36" single
Yates No. 156, 30" single, B.B.
Whitney No. 24, 36" Double D.M.D.
ROUTERS
Porter No. 622 Router
Onsrud W-265 Electric
Onsrud W-113 Air
SANDERS
Yates No. 431, 43" Endless Bed, 3-dr.
Amer. No. 2, 43" roll feed, 3-dr.
Curtis No. 11 Semi-Auto. Belt Sander
Nash No. 65 Automatic Turning
Wysong & Miles 16" Disc Sander
SAWS—CUT-OFF
Porter, Floor Type
Y-A C-44 Floor Type—with table
Bell No. 12 Double Miter
Mereen-Johnson No. 435, Multiple
Monarch X36-AE Radial
SAWS—CHAIN FEED
Mattison No. 205, Ball Berg., D.M.D.
American No. 40, Motor Driven
SAWS—Self-Feed
Hermance No. 31
American No. 1
SAW TABLES
Root and American
American Dbl. Revol. Arbor
American No. 7½ Comb. & Dado
Tannewitz SJ Tilting Arbor

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SUTTON GUARANTEED

BORERS

Single Spindle Fay & Egan No. 1 Vert. Borer
Multiple Spindle Vertical Fay & Egan Borer
Greenlee No. 386 Vertical Gang Borer
Greenlee No. 369 Vertical Gang Borer
Greenlee No. 356 M.D. Sgle. Spdle. Vert. Borer

CLAMPS

Handy No. 103 Frame Clamp
Taylor Revolving Clamp Carrier
High Point Drawer Clamp

DOVETAILERS

One Pair 12 Spindle Dodds Dovetailers Each Equipped With Tongue Automatic Feed for doing Fronts, Backs, and Sides with Motors

FANS

68" Diameter Ball Bearing Cooling Fan.
60" Double Ball Bearing Shaving Exhaust Fan with 25 HP motor

GLUE SPREADERS

New Union 60" - No. 31 Dble Rubber Roll Resin Glue Spreader
New Union 54" - No. 31 Dble Rubber Roll Resin Glue Spreader
Pract. new Black Bros. 12" M. D. Edge Glue Spreader
Francis 72" and 84" No. 290 Plate Glue Spreader
New Union Conveyorized Edge Glue Spreader for Resin Glue

GRINDING ROOM EQUIPMENT

American No. 9 Automatic Knife Grinder

JOINTERS

12" Yates No. 199 M. D. Ball Brg Round Head
Diehl No. 60 Direct Motor Driven Glue Jointer

LATHES

Yates 42" No. 74 Automatic Lathe Ball Bearing
Mattison 42" Ball Bearing No. 57-D with Motor

MORTISERS

Wysong & Miles No. 288 Multiple Spdl Mortiser
Wysong & Miles No. 286 Hinge Seat Mortiser
Greenlee Single Spindle Vertical Mortiser

MOULDERS

10" Yates-American C55 Electric Moulder
Yates-American 10" C-99 Electric Moulder

PLANERS

New Crescent P-24 Direct Motor Drive Round Head with Grinder
Yates No. 177 Direct Motor Drive Round Head with Grinder
Buss 30" Direct Motor Drive Round Head with Grinder
Fay & Egan 36" Direct Motor Drive Round Head
Whitney 30" No. 24 Dble Planer Round Heads, Direct Motor Drive
Whitney 40" No. 97 Dble. Planer, Direct Motor Drive
Oliver Straitoplane

SANDERS

Yates-American 43" No. 433 Direct Motor Driven
Wysong & Miles No. 294 Auto. Stroke Sander
Mattison No. 124 Automatic Stroke Sander
American No. 7 Oscillating Spindle Sander
Fay & Egan Direct Motor Driven Ball Bearing Sander, Endless Bed

BAND SAWS

J. A. Fay Band Saw 42", V-belt drive

RESAWS

One Circular Resaw
42" J. A. Fay & Egan No. 58 combination Band Scroll and Resaw

CUTOFF SAWS

Newman Swing Cut-Off Saw
Beach Ball Brng Roller Tbl. Dble Cut-Off Saw
Jenkins No. 105-A M. D. Ball Bearing Chain feed Double Cut-Off Saw
Wilkin-Challoner M. D. Ball Bearing Chain Feed Double Cut-Off Saw

RIP SAWS

Mattison No. 207 Direct Motor Driven Ball Bearing Glue Joint Rip Saw
Yates-American Direct Motor Driven Ball Bearing Chain Feed Rip Saw
Fay & Egan No. 504 Direct Motor Driven Ball Bearing Self Feed Rip Saw
American No. 15 Ball Brng Chain Feed Rip Saw
New Mereen-Johnson No. 441 Gang Rip Saw

VARIETY SAWS

Yates-American No. 1 Direct Motor Drive Ball Bearing Tilting Table
Buss Direct Motor Driven Ball Bearing Tilting Table
Crescent Direct Motor Drive Ball Bearing Tilt-Table
Beach Direct Motor Drive Ball Bearing Tilting Table

SHAPERS

Whitney Double Spindle Ball Bearing Built-in Motor
New Crescent Type S-2 Single Spindle with 2 HP motor

TENONERS

Jenkins No. 95 Electric Double End Tenoner
Greenlee 545 Double End Tenoner
Wilkin-Challoner No. 70 Double End Tenoner
American Single End Tenoner

VENEER MACHINERY

Francis Laboratory Hot Press
Two Dennis Veneer Taping Machines Motor Driven Variable Feed

MISCELLANEOUS

Wilkin-Challoner Dowel Cutter and Pointer
Gardner-Rix 6" x 6" Twin Cyl. Air Compressor with 15 HP Motor

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P.O. Drawer Q-2 **Phone 2-4186** **Greensboro, N. C.**

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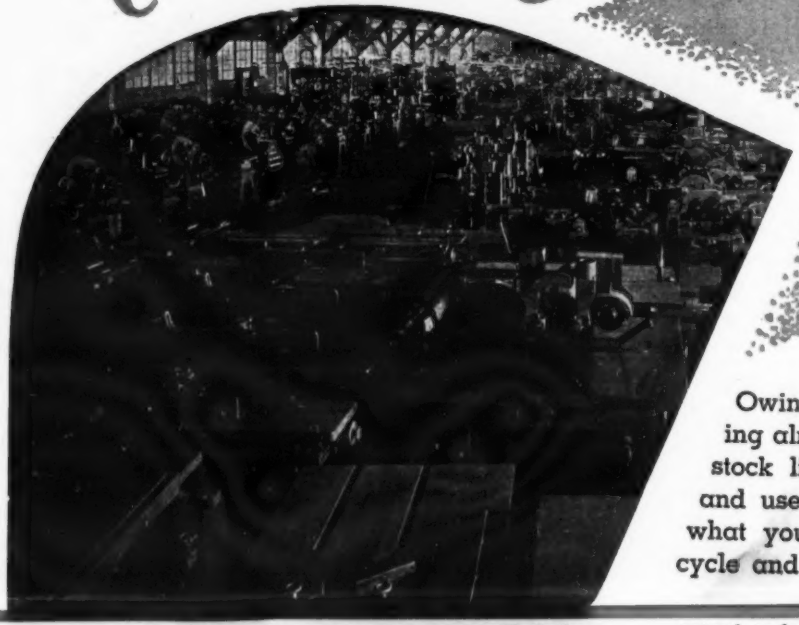

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Owing to our very large stock changing almost daily, we are omitting our stock list. We have about 350 new and used machines. Tell us exactly what you want, and advise phase, cycle and voltage of your current.

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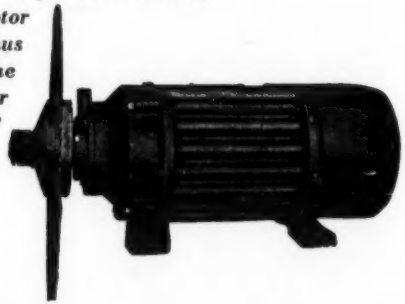
MOTORS Totally enclosed, dust proof, fan cooled, ball bearing saw arbor motors, 3600 r.p.m. From 1 h.p. to 15 h.p. Measures only 3¼" from center of motor shaft to flatted top. Thus facilitating the use of the smallest possible diameter saw blade. (2, 3 & 5 HP motors available for quick shipment.)



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Band Saw, Tannewitz "GH", 36", ballb., mtr.
Borer, vert., dbl. column, Andrew No. 75, ballb., autom., 60", 10 h.p. 850 rpm mtr.
Borer, horiz., Andrew 42", 3-spdl., mtr.
Borer, horiz. Oliver No. 71, 2-spdl. radial.
Blower, Garden City 35", ball bearing.
Chucking Machine, McKnight, foot-feed.
Clamp, 2-Way, Handy No. 35.
Door Clamps (2), power and foot operated.
Dovetailer, Dodds, 15-spindle.
Dowel Cutter and Pointer, Bell No. 3.
Dowel Machine, Hawker No. 2, ball bearing.
Dowel Gluer & Driver, Bell No. 8, mtr.
End Matcher, Sherman Style B.
Glue jointer, ballb., Linderman, mtrs.
Hand-Hole machine, Woodworker's, ball bearing.
Jointer, 20", F. & E., ball bearing.
Jointer with power feed, Oliver No. 122-D, 30", 4-kn. rd. cyl., 3 mtrs., elec. grinder.
Lathe, autom., Imperial 31", 10 h.p., ballb.
Lock corner cutter, double end, B. & M.
Moldmatcher, XL, 4", 3 sgl.-ph. motors
Mortiser, chain-saw, New Britain, No. 3.
Moulder, elec., Mattison No. 229, 8",-freq.-changer.
Moulder, 4-side, Hall & Brown, 8", mtr.
Moulder, 4-s., Smith 6", ballb., mtr.
Nailer-Cleater, Morgan No. 8, meter.
Planers, sgl., 12", 16" and 20".
Planer, dbl., Yates No. 177, ballb., 30"x12".
Planer, facing, Oliver No. 122-D, 30", 3 motors, electric grinder.
Ripsaw, self-feed, Sinker-Davis, ballb., mtr.
Ripsaw, ballb., Yates-Am. No. 40, chain-fd., mtr.
Router, elec., Porter No. 612, 3 h.p.
Sander, horiz., edge belt, Indiana, ballb.
Sander, edge moulding, Roth No. 99, motor.
Sander, autom., Lincoln 8-spindle.
Sander, 3-dr., Berlin 30", 4 motors.
Sander, 3-dr., roll-fd., F. & E. No. 225, 42".
Sander, 2-drum, e.b., Yates No. 413, 31", motors.
Saw, tilt arbor, Whitney, ballb.
Saw, autom., cut-off, foot-fd., Smith No. 343-B.
Shaper, autom., Whitney, freq-changer
Shaper, 2-spdl., Porter No. 201 SVM, two 5 h.p. vert. belted motors.
Sticker, Williamsport, pl. & bor. attachm.
Tenoner, sgl.-end, Powermatic, ballb. copes & cut-off saw.
Woodworker, combination, Parks, ballb., comprising bandsaw, ripsaw, jointer, swingsaw, mortiser, shaper, disc sander and tenoner.

SUNDRY OTHER MACHINES IN STOCK.

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Guaranteed Used Machinery

Band Resaw, Fisher 60" Box Factory type rolls, 24" high, open 6", B.D.
Band Saw, Tannewitz type G-I 36" with 32" under guide B.B. with 15 HP motor
Band Saw, Oliver No. 16-36", V-belt drive
Band Saw, 20" Crescent M.D., New
Band Saw, 36" H. & B. No. 120 B.D.
Band Saw Filer, Black Diamond M.D.
Boring Machine, American 3 spindle, Horizontal
Boring Machine, Newton 2 spindle horizontal
Boring Machine, Andrews Vertical Multiple, 8 spindles with motor.
Box Board Matcher, Morgan
Box Board Matcher, Hall & Brown No. 176 M.D.
Chucking Machine, Smith, 3 HP motor
Clamp Carrier, 40 section 6½ ft. Taylor
Dovetailer, Dodds 12-spindle, M.D.
Glue Spreader, 60" Francis Dbl.
Grinder Head, Yates-American No. 137
Grinder, Knife, Auto. 30" Fay & Egan No. 253 Disk Wheel
Jointer, 24" Crescent, Belt Drive
Jointer 12" Hall & Brown with motor
Knife Grinder, auto Rogers style F-32"
Lathe, Auto. Berlin with heads, B.D.
Lathe, Propeller Fahlin 10' motor drive with wood patterns and jigs
Lathe, Waymouth, Automatic
Mortiser, Chain, New Britain No. 3
Mortiser, Crescent Hollow Chisel, New
Moulder, Hall & Brown 12"—4 side belt drive
Moulder 9"—4 side Fay & Egan with motor
Nailing Machines, Doig 13 and 17 track, closed back
Planer, New Powermatic 12x4" M.D.
Planer, single 16x6" Powermatic, New
Planer, single 24x6 Northfield No. 5, New
Planer, single Crescent No. P-24—24 x 8 ball bearing, direct motor drive.
Planer, 12x4" Boice Crane No. 1002, New
Radial Saw, Comet Clipper, 3 HP, New
Radial Saw, Comet Sr., 5 HP, New
Radial Saws, Multiplex 30A and 40A new.
Rip Saw, Chain Feed Mattison No. 205 M.D.
Router, Onsrud No. W-240D—5 HP late type
Router Yates-American No. U-90
Router & Borer, Radial Arm, Onsrud No. A1
Router, Duro floor model, M.D.
Router, Onsrud No. A1R Radial Arm
Sander, Crescent 18" Disc, New
Sander, Belt, Fay & Egan No. 553
Sander, Belt, Auto., Curtis 6'
Sander, Nash auto. belt for Bowling Pins
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Saw, Swing, H. & A. No. 25—14", New
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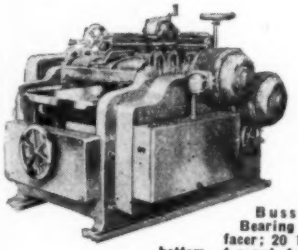

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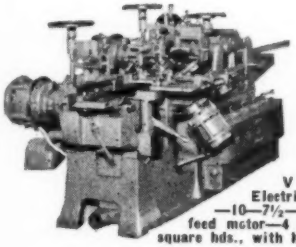

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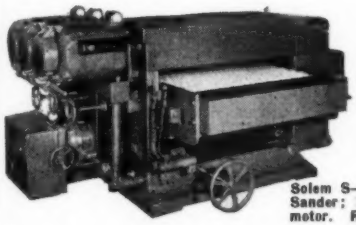

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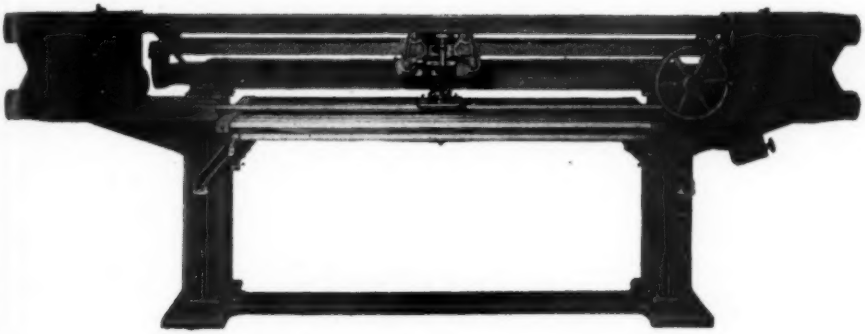

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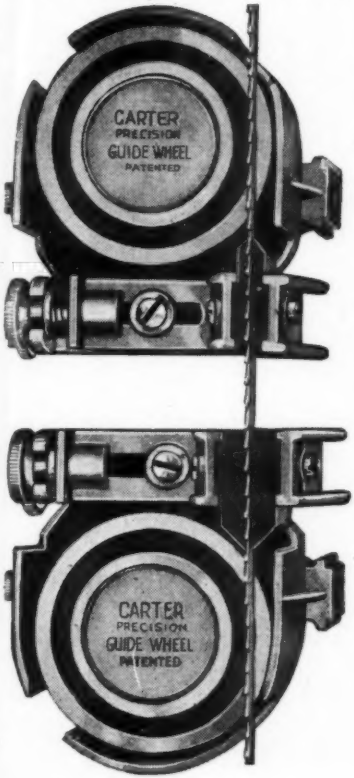

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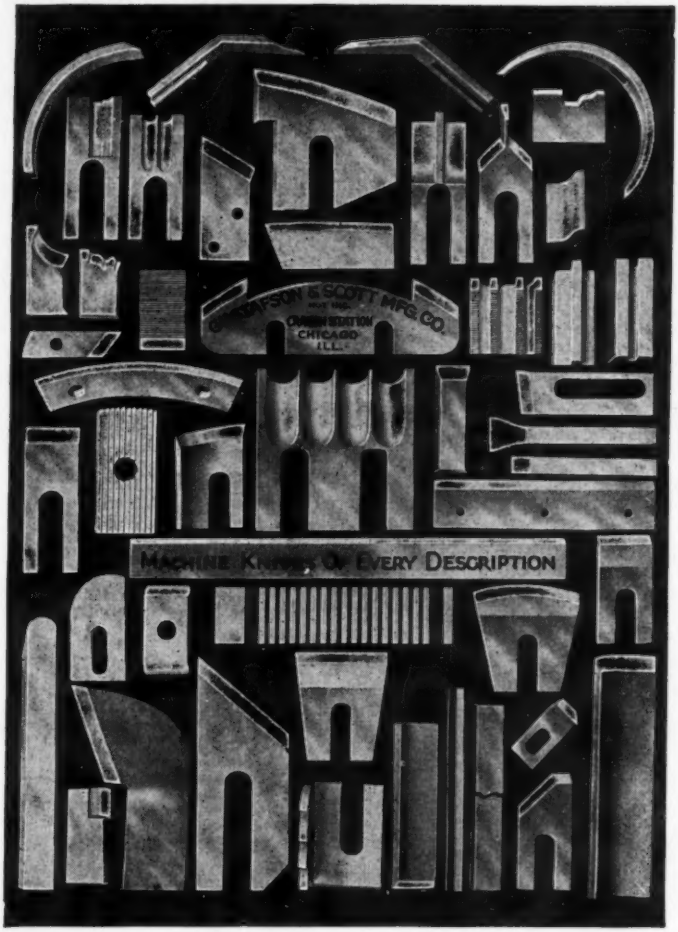

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